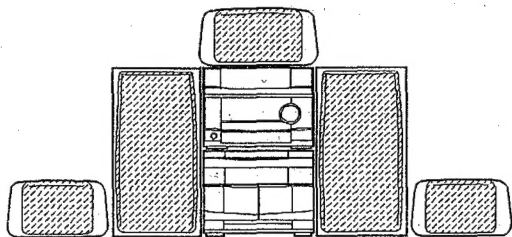


# aiwa



## NSX-AVH9



COMPACT DISC STEREO  
CASSETTE RECEIVER

- BASIC TAPE MECHANISM: 2ZM-3MK2 PR2N
- BASIC CD MECHANISM: 4ZG-1WRNM

• TYPE: HE, HR

- If requiring information about the CD mechanism, see Service Manual of 4ZG-1WR.  
( S/M Code No. 09-965-128-10T )
- If requiring information about the FD-NH9/NH90, see Service Manual of NSX-H9/H90.  
( S/M Code No. 09-966-141-50T )

SYSTEM	AMPLIFIER	CASSETTE DECK CD PLAYER	REMOTE CONTROLLER	SPEAKERS
NSX-AVH9	RX-NAVH9	FD-NH9	RC-T506	SX-NAVH9 SX-C400 SX-R230

## SPECIFICATIONS

### STEREO RECEIVER RX-NAVH9

#### FM tuner section

Tuning range	87.5 MHz to 108 MHz
Usable sensitivity (IHF)	13.2 dBf
Antenna terminals	75 ohms (unbalanced)

#### AM tuner section

Tuning range	531 kHz to 1602 kHz (9 kHz step) 530 kHz to 1710 kHz (10 kHz step)
Usable sensitivity	350 $\mu$ V/m
Antenna	Loop antenna

#### Amplifier section

Power output	<b>Front</b> (without connecting to the SURROUND SPEAKERS) Rated: 95 W + 95 W (6 ohms, T.H.D. 1%, 1 kHz) Reference: 80 W + 80 W (6 ohms, T.H.D. 10%, 1 kHz) <b>Rear (Surround)</b> Rated: 18 W + 18 W (16 ohms, T.H.D. 1%, 1 kHz) Reference: 20 W + 20 W (16 ohms, T.H.D. 10%, 1 kHz) <b>Center</b> Rated: 18 W (8 ohms, T.H.D. 1%, 1 kHz) Reference: 20 W (8 ohms, T.H.D. 10%, 1 kHz) <b>Total harmonic distortion</b> Inputs 0.1 % (60 W, 1 kHz, 6 ohms) VIDEO 1/MD IN: 200mV (adjustable) VIDEO 2/AUX IN: 200 mV (adjustable) MIC 1, MIC 2: 1 mV (10 kohms) LINE OUT: 200 mV SUPER WOOFER: 2.6 V SPEAKERS: accept speakers of 6 ohms or more SURROUND SPEAKERS: accept speakers of 16 ohms or more PHONES (stereo jack): accepts headphones of 32 ohms or more
Outputs	

#### General

Power requirements	120 V/220 – 230 V/240 V AC, switchable 50/60 Hz
Power consumption	160 W (system 180 W)
Dimensions of main unit (W x H x D)	260 x 198 x 333.5 mm
Weight of main unit	6.5 kg

#### Compact disc player section


Laser	Semiconductor laser ( $\lambda = 780$ nm)
D-A converter	1 bit dual
Signal-to-noise ratio	85 dB (1 kHz, 0 dB)
Harmonic distortion	0.03 % (1 kHz, 0 dB)
Wow and flutter	Unmeasurable

#### General

Dimensions (W x H x D)	260 x 203 x 321.5 mm
Weight	3.9 kg

### Speaker system SX-NAVH9

Cabinet type	3 way, bass reflex (magnetic sealed type)
Speakers	Woofer: 140 mm cone type Tweeter: 60 mm cone type Super tweeter: 20 mm ceramic type
Impedance	6 ohms
Output sound pressure level	88 dB/W/m
Dimensions (W x H x D)	230 x 396 x 265 mm
Weight	4.5 kg

- Design and specifications are subject to change without notice.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol  and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.
- The word "BBE" and the "BBE symbol" are trademarks of BBE Sound, Inc. Under license from BBE Sound, Inc.

### COMPACT DISC/STEREO CASSETTE DECK FD-NH9

#### Cassette deck section

Track format	4 tracks, 2 channels stereo
Frequency response	Metal tape: 35 Hz – 17000 Hz CrO <sub>2</sub> tape: 50 Hz – 16000 Hz Normal tape: 55 Hz – 15000 Hz
Signal-to-noise ratio	75 dB (Dolby C NR ON, Metal tape peak level)
Recording system	AC bias
Heads	Deck 1: Playback head x 1 Deck 2: Recording/playback/erase head x 1



MODEL NO.

## RX-NAVH9

## ELECTRICAL MAIN PARTS LIST

DESCRIPTION で判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC	87-A20-069-049		C-IC, BA3842F		87-017-148-089		ZENER, HZS6A1L
	87-A20-067-040		C-IC, M65849FP		87-001-731-089		ZENER HZS6C2L
	87-A20-191-019		IC, STK-419-140A		87-001-911-089		ZENER, UTZJ4.7A (TAPG)
	87-A20-082-010		C-IC, NJW1102AFG1	MAIN C.B			
	87-017-888-080		C-IC, NJM4558MD				
	87-017-888-089		IC, NJM4558MD		C101	87-016-520-099	CAP E 3300-65
	87-017-915-089		IC, BU4094BCF		C102	87-016-520-099	CAP E 3300-65
	87-017-804-019		IC, BU4052BC		C104	87-010-235-089	CAP, E 470-16 SME
	87-A20-083-019		IC, BA3835S		C105	87-010-235-089	CAP, E 470-16 SME
	87-A20-107-019		IC, BA3836		C106	87-016-285-089	CAP, E 47-100 SME
	87-017-914-019		IC, BU4094 BC		C107	87-A10-253-089	CAP, E 3.3-50 BP
	87-A20-056-019		IC, BA3880S		C108	87-010-407-089	CAP, E 33-50 SME
	87-070-267-010		C-IC, STK405-050		C109	87-010-263-089	CAP, E 100-10 SME 5X11
	87-070-127-119		IC, LC72131D		C112	87-010-382-089	CAP, E 22-25 SME
	87-017-714-119		IC, LA1836L		C113	87-010-403-089	CAP, E 3.3-50 SME
	86-NT1-620-010		IC, LC 866424V-5A99		C116	87-012-140-089	C-CAP, S 470P-50 CH
	87-070-083-019		IC, GP1U281X		C121	87-012-368-089	C-CAP, S 0.1-50 F
					C122	87-012-368-089	C-CAP, S 0.1-50 F
					C123	87-012-368-089	C-CAP, S 0.1-50 F
					C124	87-012-368-089	C-CAP, S 0.1-50 F
TRANSISTOR	89-213-702-019		TR, 2SB1370E		C125	87-010-263-089	CAP, E 100-10 SME 5X11
	89-109-352-089		TR, 2SA 935 Q		C126	87-010-189-080	C-CAP, S 8200P-50 K B
	87-026-610-089		TR, KTC3198GR		C127	87-010-189-080	C-CAP, S 8200P-50 K B
	89-332-665-089		TR, 2SC3266GR		C131	87-010-186-089	C-CAP, S 4700P-50 B
	89-337-221-389		C-TR, 2SC3722K		C132	87-010-186-089	C-CAP, S 4700P-50 B
	89-324-122-089		C-TR, 2SC 2412R		C152	87-010-260-089	CAP, E 47-25 SME
	89-110-372-089		C-TR, 2SA1037 R		C171	87-010-453-090	CAP, E 4700-25 SME
	89-110-373-089		C-TR, 2SA1037 S		C172	87-010-453-090	CAP, E 4700-25 SME
	87-026-210-089		C-TR, DTC144EK T147		C173	87-012-368-089	C-CAP S 0.1-50F
	87-026-235-080		C-TR, DTC114EK		C174	87-012-368-089	C-CAP S 0.1-50F
	89-421-141-289		C-TR, 2SD2114K, UV		C175	87-012-368-089	C-CAP S 0.1-50F
	87-026-609-089		TR, KTA1266GR		C176	87-012-368-089	C-CAP S 0.1-50F
	89-109-373-089		TR, 2SA1037S		C220	87-010-194-089	C-CAP, S 0.047-25 F
	89-112-965-089		TR, 2SA1296GR		C221	37-010-545-089	CAP, E 0.22-50 SME
	87-026-228-089		C-TR DTA124EK		C222	87-010-545-089	CAP, E 0.22-50 SME
	89-113-187-089		TR, 2SA1318TU		C225	87-012-157-089	C-CAP, S 330P-50 CH
	87-A30-047-080		TR, CSD655E		C226	87-012-157-089	C-CAP, S 330P-50 CH
	89-333-266-089		C-TR, 2SC3326B		C227	87-010-402-089	CAP, E 2.2-50 SME
	89-110-155-080		TR, 2SA1015GR		C228	87-010-402-089	CAP, E 2.2-50 SME
	87-026-610-080		TR, KTC3198GR		C229	87-010-403-080	CAP, E 3.3-50 SME
DIODE	87-026-609-080		TR, KTA1266GR		C230	87-010-403-080	CAP, E 3.3-50 SME
	87-026-214-089		TR, DTA114YS		C231	87-018-099-089	CAP, TC-U 3.9P-50 CH
	87-026-211-089		C-TR, DTA144EK T147		C232	87-018-099-089	CAP, TC-U 3.9P-50 CH
	89-327-125-089		C-TR, 2SC2712GR		C233	87-010-196-089	C-CAP, S 0.1-25 F
	89-327-143-089		C-TR, 2SC2714 (O)		C234	87-010-196-089	C-CAP, S 0.1-25 F
	87-026-226-089		C-TR, DTA143EK		C235	87-010-196-089	C-CAP, S 0.1-25 F
	89-505-434-589		C-FET, 2SK543 (4/5)		C236	87-010-196-089	C-CAP, S 0.1-25 F
					C240	87-010-197-089	C-CAP, S 0.01-25 B
					C245	87-012-368-089	C-CAP, S 0.1-50 F
					C500	87-010-405-089	CAP, E 10-50 SME
	87-A40-116-069		DIODE, RS403L-B-D-51		C501	87-010-213-089	C-CAP, S 0.015-25 B
	87-A40-115-069		DIODE, SA D102		C502	87-010-213-089	C-CAP, S 0.015-25 B
	87-070-274-089		DIODE, 1N4003 SEM		C503	87-010-179-089	C-CAP, S 1200P-50 B
	87-020-027-089		C-DIODE, 1SS184		C504	87-010-179-089	C-CAP, S 1200P-50 B
	87-020-125-089		C-DIODE, 1SS181		C505	87-010-546-089	CAP, E 0.33-50 SME
	87-020-465-089		DIODE, 1SS133		C506	87-010-546-089	CAP, E 0.33-50 SME
	87-017-174-089		ZENER, HZS11A3L		C507	87-010-196-089	C-CAP, S 0.1-25 F
	87-017-146-089		ZENER, HZS30-2		C508	87-010-196-089	C-CAP, S 0.1-25 F
	87-001-290-089		ZENER, HZS5C1		C530	87-010-197-089	C-CAP, S 0.01-25 B
	87-017-093-080		ZENER, HZS5C3		C531	87-010-183-089	C-CAP, S 2700P-50 B
	87-A40-116-060		DIODE, RS403L-B-D-51		C532	87-010-194-089	C-CAP, S 0.047-25 F
					C533	87-010-196-089	C-CAP, S 0.1-25 F

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C534	87-010-263-089		CAP,E 100-10 SME 5X11
C535	87-010-404-089		CAP,E 4.7-50 SME
C536	87-010-404-089		CAP,E 4.7-50 SME
C537	87-010-545-089		CAP,E 0.22-50 SME
C539	87-010-194-089		C-CAP,S 0.047-25 F
C540	87-010-384-089		CAP,E 100-25 SME
C541	87-010-404-089		CAP,E 4.7-50 SME
C542	87-010-404-089		CAP,E 4.7-50 SME
C560	87-010-318-080		C-CAP,S 47P-50 J CH
C561	87-010-318-080		C-CAP,S 47P-50 J CH
C562	87-010-318-080		C-CAP,S 47P-50 J CH
C563	87-012-142-089		C-CAP,S 0.33-16 F
C564	87-010-196-089		C-CAP,S 0.1-25 F
C565	87-018-209-089		CAP,TC-U 0.1-50 F
C566	87-010-196-089		C-CAP,S 0.1-25 F
C601	87-010-184-089		C-CAP,S 3300P-50 B
C602	87-010-184-089		C-CAP,S 3300P-50 B
C603	87-010-405-089		CAP,E 10-50 SME
C604	87-010-405-089		CAP,E 10-50 SME
C605	87-010-260-089		CAP,E 47-25 SME
C606	87-010-101-089		CAP,E 220-16 SME
C607	87-010-188-089		C-CAP,S 6800P-50 B
C608	87-010-188-089		C-CAP,S 6800P-50 B
C609	87-018-127-089		CAP,TC-U 470P-50 B
C610	87-018-127-089		CAP,TC-U 470P-50 B
C611	87-010-197-089		C-CAP,S 0.01-25 B
C612	87-010-197-089		C-CAP,S 0.01-25 B
C613	87-010-195-089		C-CAP,S 0.068-25 F
C614	87-010-195-089		C-CAP,S 0.068-25 F
C615	87-010-404-089		CAP,E 4.7-50 SME
C616	87-010-404-089		CAP,E 4.7-50 SME
C617	87-010-404-089		CAP,E 4.7-50 SME
C618	87-010-404-089		CAP,E 4.7-50 SME
C701	87-010-381-089		CAP,E 330-16 SME
C702	87-010-404-089		CAP,E 4.7-50 SME
C703	87-010-197-089		C-CAP,S 0.01-25 B
C704	87-010-197-089		C-CAP,S 0.01-25 B
C711	87-010-263-089		CAP,E 100-10 SME 5X11
C712	87-010-196-089		C-CAP,S 0.1-25 F
C715	87-010-197-089		C-CAP,S 0.01-25 B
C716	87-010-197-089		C-CAP,S 0.01-25 B
C722	87-010-152-089		C-CAP,S 8P-50 CH
C723	87-010-178-089		C-CAP,S 1000P-50 B
C725	87-010-178-089		C-CAP,S 1000P-50 B
C727	87-010-196-089		C-CAP,S 0.1-25 F
C728	87-010-248-089		CAP,E 220-10 SME
C760	87-010-197-089		C-CAP,S 0.01-25 B
C761	87-010-196-089		C-CAP,S 0.1-25 F
C770	87-010-405-089		CAP,E 10-50 SME
C771	87-010-405-089		CAP,E 10-50 SME
C772	87-010-194-089		C-CAP,S 0.047-25 F
C773	87-010-196-089		C-CAP,S 0.1-25 F
C774	87-010-263-089		CAP,E 100-10 SME 5X11
C775	87-010-405-089		CAP,E 10-50 SME
C776	87-010-197-089		C-CAP,S 0.01-25 B
C777	87-010-400-089		CAP,E 0.47-50 SME
C778	87-010-401-089		CAP,E 1-50 SME
C779	87-010-401-089		CAP,E 1-50 SME
C780	87-010-197-089		C-CAP,S 0.01-25 B
C781	87-010-405-089		CAP,E 10-50 SME
C782	87-010-405-089		CAP,E 10-50 SME
C787	87-010-184-089		C-CAP,S 3300P-50 B
C788	87-010-184-089		C-CAP,S 3300P-50 B
C789	87-010-179-089		C-CAP,S 1200P-50 B
C790	87-010-179-089		C-CAP,S 1200P-50 B
C791	87-010-401-089		CAP,E 1-50 SME
C792	87-010-180-089		C-CAP,S 1500P-50 B
C793	87-010-189-089		C-CAP,S 8200P-50 B
C794	87-010-408-089		CAP,E 47-50 SME
C795	87-010-194-089		C-CAP,S 0.047-25 F
C796	87-010-403-089		CAP,E 3.3-50 SME
C801	87-018-134-089		CAP,TC-U0.01-16 Y

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C601	87-010-196-089	C-CAP,S 0.1-25 F	
C602	87-010-545-049	CAP,E 0.22-50 SME	
C603	87-010-321-089	C-CAP,S 82P-50 CH	
C604	87-010-196-089	C-CAP,S 0.1-25 F	
C605	87-010-196-089	C-CAP,S 0.1-25 F	
C608	87-010-177-089	C-CAP,S 820P-50 SL	
C609	87-016-251-049	CAP,E220-16 SMG	
C610	87-010-405-049	CAP,E 10-50 SME	
C611	87-010-405-049	CAP,E 10-50 SME	
C612	87-010-406-049	CAP,E 22-50 SME	
C613	87-010-401-049	CAP,E 1-50 SME	
C615	87-010-186-089	C-CAP,S 4700P-50 B	
C801	87-010-555-049	CAP,E 100-10 GAS	
C802	87-010-074-080	CAP,E 4.7-35 5L	
C803	87-010-494-049	CAP,E 1-50 GAS	
C804	87-A10-189-049	CAP,E 220-10	
C805	87-010-196-089	C-CAP,S 0.1-25 F	
C806	87-010-196-089	C-CAP,S 0.1-25 F	
C821	87-010-312-089	C-CAP,S 15P-50 CH	
C822	87-010-180-089	C-CAP,S 1500P-50 B	
C823	87-010-498-040	CAP,E 10-16 5L SRE	
C824	87-010-302-080	C-CAP,S 270P-50 CH	
C901	87-010-405-049	CAP,E 10-50 SME	
C902	87-010-405-049	CAP,E 10-50 SME	
C903	87-010-408-049	CAP,E 47-50 SME	
FC1	88-904-201-219	FF-CABLE 4P 1.25	
FL801	86-NT1-636-019	FL,BJ451GK	
J601	82-NF7-630-019	JACK,3.5 MO	
J602	82-NF7-630-019	JACK,3.5 MO	
L820	87-A50-052-019	COIL,CLOCK 5.76MHZ T1	
LED401	87-070-199-089	LED,SLP738F-81-S-T1	
LED402	87-070-199-089	LED,SLP738F-81-S-T1	
LED403	87-070-199-089	LED,SLP738F-81-S-T1	
LED404	87-070-199-089	LED,SLP738F-81-S-T1	
LED405	87-070-199-089	LED,SLP738F-81-S-T1	
LED406	87-070-199-089	LED,SLP738F-81-S-T1	
LED407	87-070-199-089	LED,SLP738F-81-S-T1	
LED408	87-070-199-089	LED,SLP738F-81-S-T1	
LED409	87-070-199-089	LED,SLP738F-81-S-T1	
LED410	87-070-199-089	LED,SLP738F-81-S-T1	
LED411	87-070-201-089	LED,SLP9118C-51-S-T1	
LED412	87-070-201-089	LED,SLP9118C-51-S-T1	
LED413	87-070-201-089	LED,SLP9118C-51-S-T1	
LED414	87-070-201-089	LED,SLP9118C-51-S-T1	
LED415	87-070-201-089	LED,SLP9118C-51-S-T1	
LED421	87-070-198-089	LED,SLP736A-81-S-T1	
LED422	87-070-198-089	LED,SLP736A-81-S-T1	
LED423	87-070-198-089	LED,SLP736A-81-S-T1	
LED424	87-070-198-089	LED,SLP736A-81-S-T1	
LED425	87-070-198-089	LED,SLP736A-81-S-T1	
LED431	87-070-198-089	LED,SLP736A-81-S-T1	
LED432	87-070-198-089	LED,SLP736A-81-S-T1	
LED433	87-070-198-089	LED,SLP736A-81-S-T1	
LED434	87-070-198-089	LED,SLP736A-81-S-T1	
LED435	87-070-198-089	LED,SLP736A-81-S-T1	
LED436	87-A40-188-089	LED,SLZ736A-17-S-T2	
LED437	87-A40-188-089	LED,SLZ736A-17-S-T2	
LED438	87-070-200-080	LED,SLP-636C-81-S-T1 ORN	
LED439	87-070-200-080	LED,SLP-636C-81-S-T1 ORN	
LED440	87-070-200-080	LED,SLP-636C-81-S-T1 ORN	
LED441	87-070-200-080	LED,SLP-636C-81-S-T1 ORN	
LED442	87-070-200-080	LED,SLP-636C-81-S-T1 ORN	
LED443	87-070-200-080	LED,SLP-636C-81-S-T1 ORN	
△PR465	87-A90-247-080	PROTECTOR,0.315A 60V 491	
S920	87-A90-095-089	SW,TACT EVQ11G04M	
S921	87-A90-095-089	SW,TACT EVQ11G04M	
S922	87-A90-095-089	SW,TACT EVQ11G04M	
S923	87-A90-095-089	SW,TACT EVQ11G04M	
S924	87-A90-095-089	SW,TACT EVQ11G04M	
S925	87-A90-095-089	SW,TACT EVQ11G04M	
S926	87-A90-095-089	SW,TACT EVQ11G04M	
S927	87-A90-095-089	SW,TACT EVQ11G04M	

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
S928	87-A90-095-089	SW,TACT EVQ11G04M	
S932	87-A90-095-089	SW,TACT EVQ11G04M	
S933	87-A90-095-089	SW,TACT EVQ11G04M	
S934	87-A90-095-089	SW,TACT EVQ11G04M	
S935	87-A90-095-089	SW,TACT EVQ11G04M	
S936	87-A90-095-089	SW,TACT EVQ11G04M	
VR101	86-NT1-634-010	VR,RTRY 100KW -L20	
VR601	87-A90-124-019	VR,RTRY 10KA L20	
MVR C.B			
C201	87-010-545-040	CAP,E 0.22-50 SME	
C202	87-010-545-040	CAP,E 0.22-50 SME	
C203	87-016-281-040	CAP,E 4.7-50 BP SME	
C205	87-010-263-089	CAP,E 100-10 SME 5X11	
C206	87-010-263-089	CAP,E 100-10 SME 5X11	
C207	87-010-318-089	C-CAP,S 47P-50 CH	
C208	87-010-318-089	C-CAP,S 47P-50 CH	
C209	87-A10-229-080	C-CAP,S 0.68-10 K W5R	
C210	87-010-197-089	C-CAP,S 0.01-25 B	
C211	87-010-179-089	C-CAP,S 1200P-50 B	
C212	87-010-196-089	C-CAP,S 0.1-25 F	
C215	87-010-196-089	C-CAP,S 0.1-25 F	
C216	87-010-187-089	C-CAP,S 5600P-50 B	
C217	87-010-182-089	C-CAP,S 2200P-50 B	
C218	87-012-393-089	C-CAP,S 0.22-16,R,K	
C219	87-010-194-089	C-CAP,S 0.047-25 F	
C220	87-010-181-080	C-CAP,S 1800P-50 K B	
C221	87-010-196-089	C-CAP,S 0.1-25 F	
C222	87-010-179-089	C-CAP,S 1200P-50 B	
C223	87-010-177-089	C-CAP,S 820P-50 SL	
C224	87-018-134-080	CAP,TC U 0.01-16 N Y UP050	
C231	87-010-176-080	C-CAP,S 680P-50 J SL	
C232	87-010-176-080	C-CAP,S 680P-50 J SL	
C237	87-016-456-040	CAP,E 22-16 LLA	
C238	87-010-384-040	CAP,E 100-25 SME	
C239	87-010-196-080	C-CAP,S 0.1-25 Z F	
C240	87-010-260-040	CAP,E 47-25 SME	
C242	87-016-472-040	CAP,E 22-16 K SME	
C243	87-010-263-040	CAP,E 100-10 SME	
C244	87-016-081-080	C-CAP,S 0.1-16 K R	
C245	87-010-405-040	CAP,E 10-50 SME	
C246	87-010-405-040	CAP,E 10-50 SME	
C247	87-010-405-040	CAP,E 10-50 SME	
C248	87-010-405-040	CAP,E 10-50 SME	
C249	87-010-405-040	CAP,E 10-50 SME	
C250	87-016-251-040	CAP,E 220-16 SMG	
C251	87-012-140-080	C-CAP,S 470P-50 J CH	
C252	87-010-186-080	C-CAP,S 4700P-50 K B	
C253	87-010-187-080	C-CAP,S 5600P-50 K B	
C256	87-012-394-080	C-CAP, 0.68-16 K W5R CM/CB	
C257	87-012-393-080	C-CAP,S 0.22-16 K W5R CM/CB	
C258	87-012-393-080	C-CAP,S 0.22-16 K W5R CM/CB	
C259	87-010-404-040	CAP,E 4.7-50 SME	
C260	87-010-404-040	CAP,E 4.7-50 SME	
C261	87-012-393-080	C-CAP,S 0.22-16 K W5R CM/CB	
C262	87-012-393-080	C-CAP,S 0.22-16 K W5R CM/CB	
C263	87-016-081-080	C-CAP,S 0.1-16 K R	
C266	87-016-081-080	C-CAP,S 0.1-16 K R	
C267	87-016-081-080	C-CAP,S 0.1-16 K R	
C270	87-016-081-080	C-CAP,S 0.1-16 K R	
C280	87-010-196-089	C-CAP,S 0.1-25 F	
C281	87-010-402-040	CAP,E 2.2-50 SME	
C282	87-010-402-040	CAP,E 2.2-50 SME	
C283	87-010-400-040	CAP,E 0.47-50 SME	
C284	87-010-400-040	CAP,E 0.47-50 SME	
C285	87-010-263-089	CAP,E 100-10 SME 5X11	
C286	87-010-384-089	CAP,E 100-25 SME	
C287	87-010-322-080	C-CAP,S 100P-50 J CH	
C288	87-010-322-080	C-CAP,S 100P-50 J CH	
C301	87-010-402-049	CAP,E 2.2-50 SME	
C302	87-010-402-049	CAP,E 2.2-50 SME	

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C303	87-010-404-049		CAP,E 4.7-50 SME
C304	87-010-404-049		CAP,E 4.7-50 SME
L201	87-005-481-089		COIL,47UH J FLR50
MVR281	86-NT1-632-010		VR,MOT 50KBX4 -L20
R257	87-025-407-080		RES,M/F 100K-1/8W F

#### TRAY C.B

S937	87-A90-095-089	SW,TACT EVQ11G04M
S938	87-A90-095-089	SW,TACT EVQ11G04M
S939	87-A90-095-089	SW,TACT EVQ11G04M
S940	87-A90-095-089	SW,TACT EVQ11G04M
S941	87-A90-095-089	SW,TACT EVQ11G04M
S942	87-A90-095-089	SW,TACT EVQ11G04M
S945	87-036-110-019	SW,PUSH SPPB 62
S946	87-A90-095-089	SW,TACT EVQ11G04M
S947	87-A90-095-089	SW,TACT EVQ11G04M
S948	87-A90-095-089	SW,TACT EVQ11G04M
S949	87-A90-095-089	SW,TACT EVQ11G04M
S950	87-A90-095-089	SW,TACT EVQ11G04M
S951	87-A90-095-089	SW,TACT EVQ11G04M
S952	87-A90-095-089	SW,TACT EVQ11G04M
S953	87-A90-095-089	SW,TACT EVQ11G04M
S954	87-A90-095-089	SW,TACT EVQ11G04M
S955	87-036-110-019	SW,PUSH SPPB 62

#### AC-2 C.B

△PR101	87-A90-195-089	PROTECTOR 7A125V491
△PR102	87-A90-195-089	PROTECTOR 7A125V491

#### PT-H C.B

△	87-033-147-019	CLAMP,FUSE
△	82-304-743-019	TERMINAL 1P
△F101	87-035-193-010	FUSE,5A 250V T 218
△PT103	86-NT1-626-010	PT,6NT1PR-HR
△SW101	87-A90-165-010	SW,SL 1-2-3 SWS2301

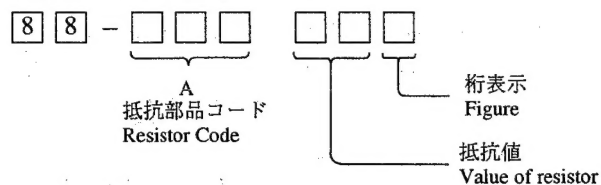
REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
MOTOR C.B			
C970	87-010-263-089		CAP,E 100-10 SME 5X11
C971	87-010-263-089		CAP,E 100-10 SME 5X11
M971	87-045-383-010		MOT,M9I T2

#### R-AMP C.B

C701	87-012-368-080	C-CAP,S 0.1-50 Z F
C702	87-012-368-080	C-CAP,S 0.1-50 Z F
C703	87-010-398-090	CAP,E 2200-35 SME
C704	87-010-398-090	CAP,E 2200-35 SME
C705	87-010-401-040	CAP,E 1-50 SME
C706	87-010-194-080	C-CAP,S 0.047-25 K F
C707	87-012-140-080	C-CAP,S 470P-50 J CH
C708	87-012-140-080	C-CAP,S 470P-50 J CH
C709	87-010-402-040	CAP,E 2.2-50 SME
C710	87-010-402-040	CAP,E 2.2-50 SME
C711	87-010-405-040	CAP,E 10-50 SME
C712	87-010-405-040	CAP,E 10-50 SME
C715	87-010-147-080	C-CAP,S 3P-50 C CH GRM
C716	87-010-147-080	C-CAP,S 3P-50 C CH GRM
C717	87-010-993-080	C-CAP,S 0.056-25 J B
C718	87-010-993-080	C-CAP,S 0.056-25 J B
C719	87-010-196-080	C-CAP,S 0.1-25 Z F
C720	87-010-196-080	C-CAP,S 0.1-25 Z F
C721	87-010-193-080	C-CAP,S 0.033-25 K F
C722	87-010-193-080	C-CAP,S 0.033-25 K F
C723	87-010-197-080	C-CAP,S 0.01-25 K B
FC2	88-906-101-110	FF-CABLE, 6P 1.25
J701	87-099-803-010	JACK,PIN 3P OWR
L701	87-003-383-010	COIL,1UH K
L702	87-003-383-010	COIL,1UH K
R707	87-022-050-080	RES,M/F 0.22-1W J
R708	87-022-050-080	RES,M/F 0.22-1W J

#### ○チップ抵抗部品コード/CHIP RESISTOR PART CODE

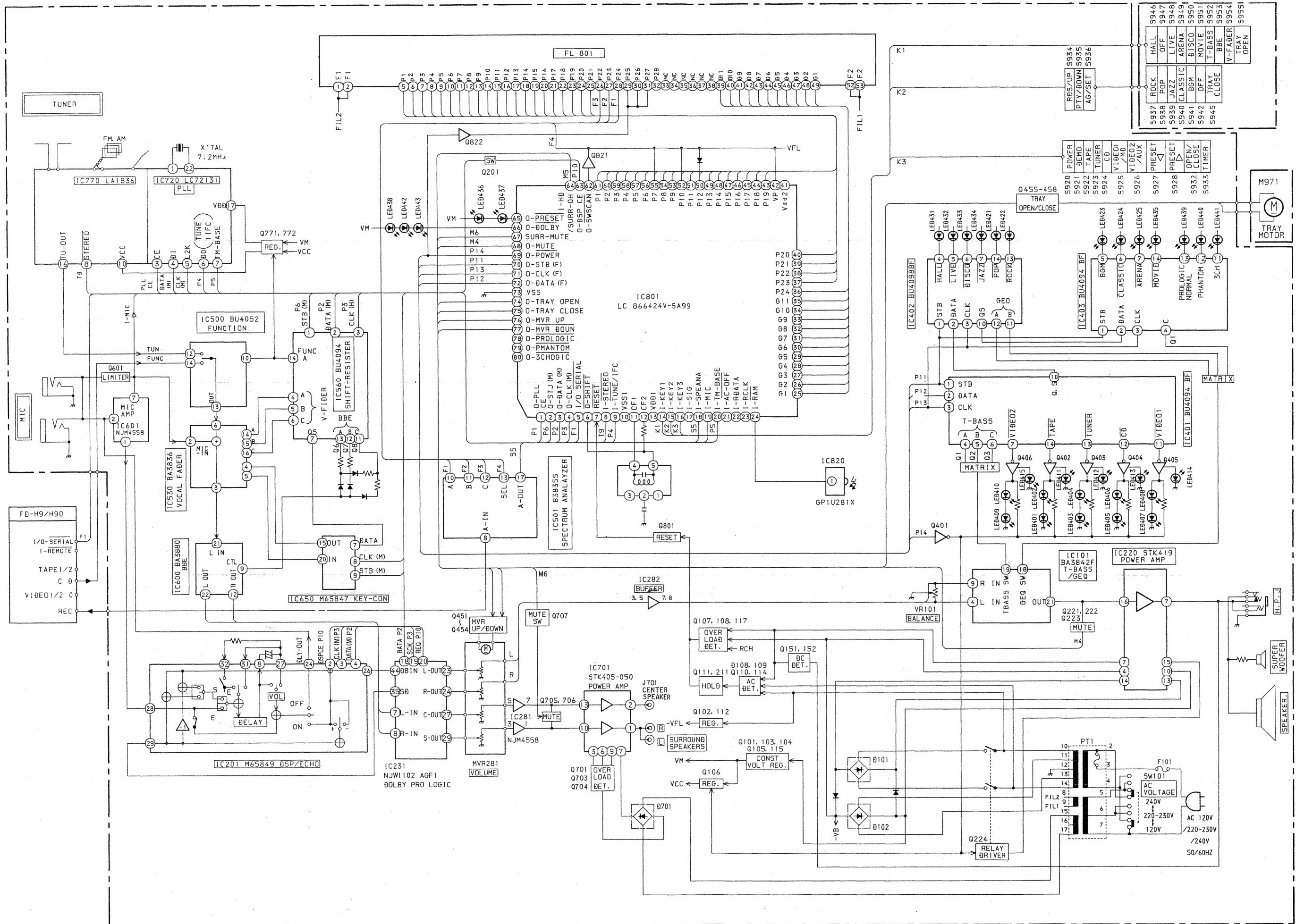
チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



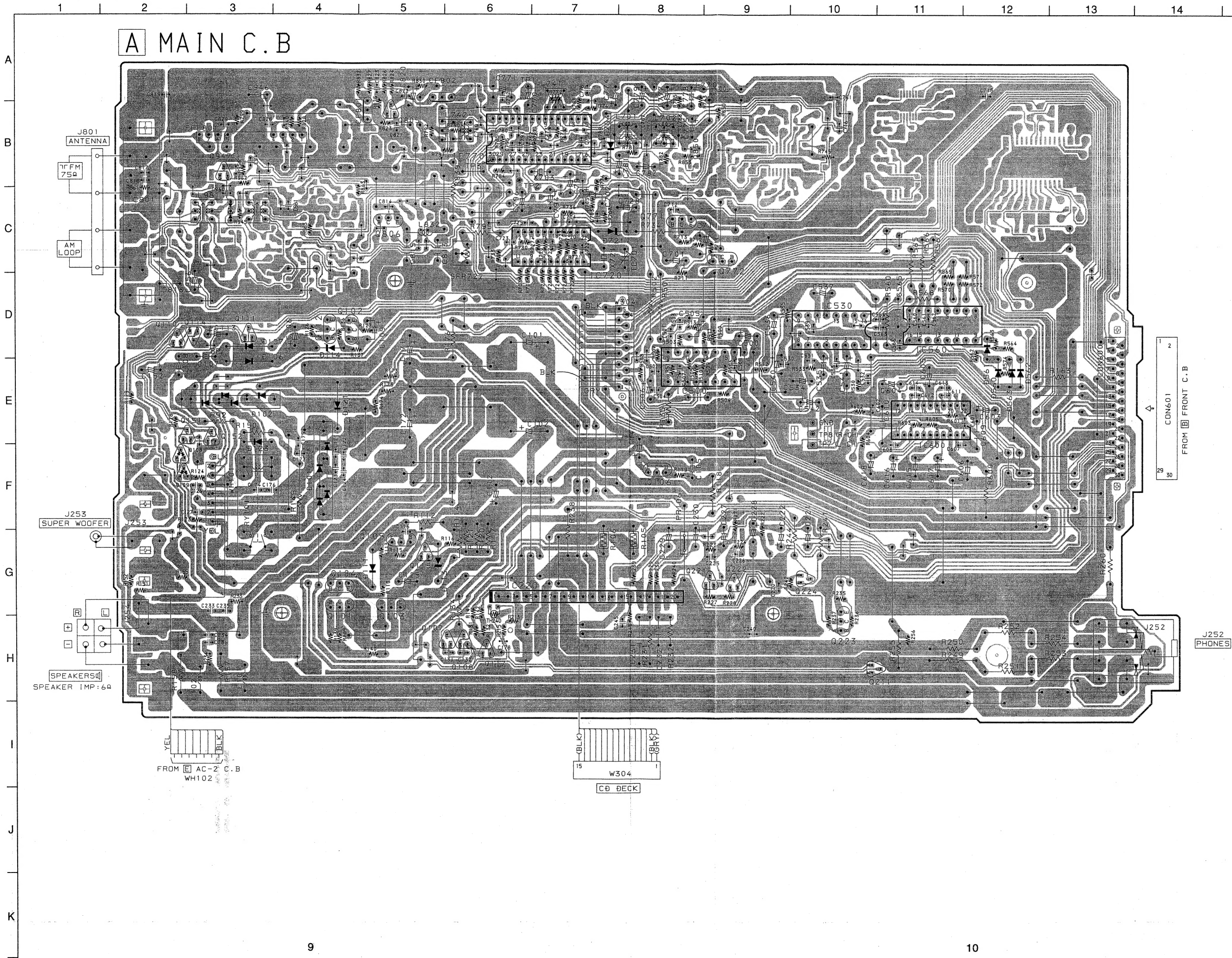
#### チップ抵抗 Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法/Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形/Form	L	W	t	
1/16W	1608	±5%	CJ		1.6	0.8	0.45	108
1/10W	2125	±5%	CJ		2	1.25	0.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.55	128

### BLOCK DIAGRAM

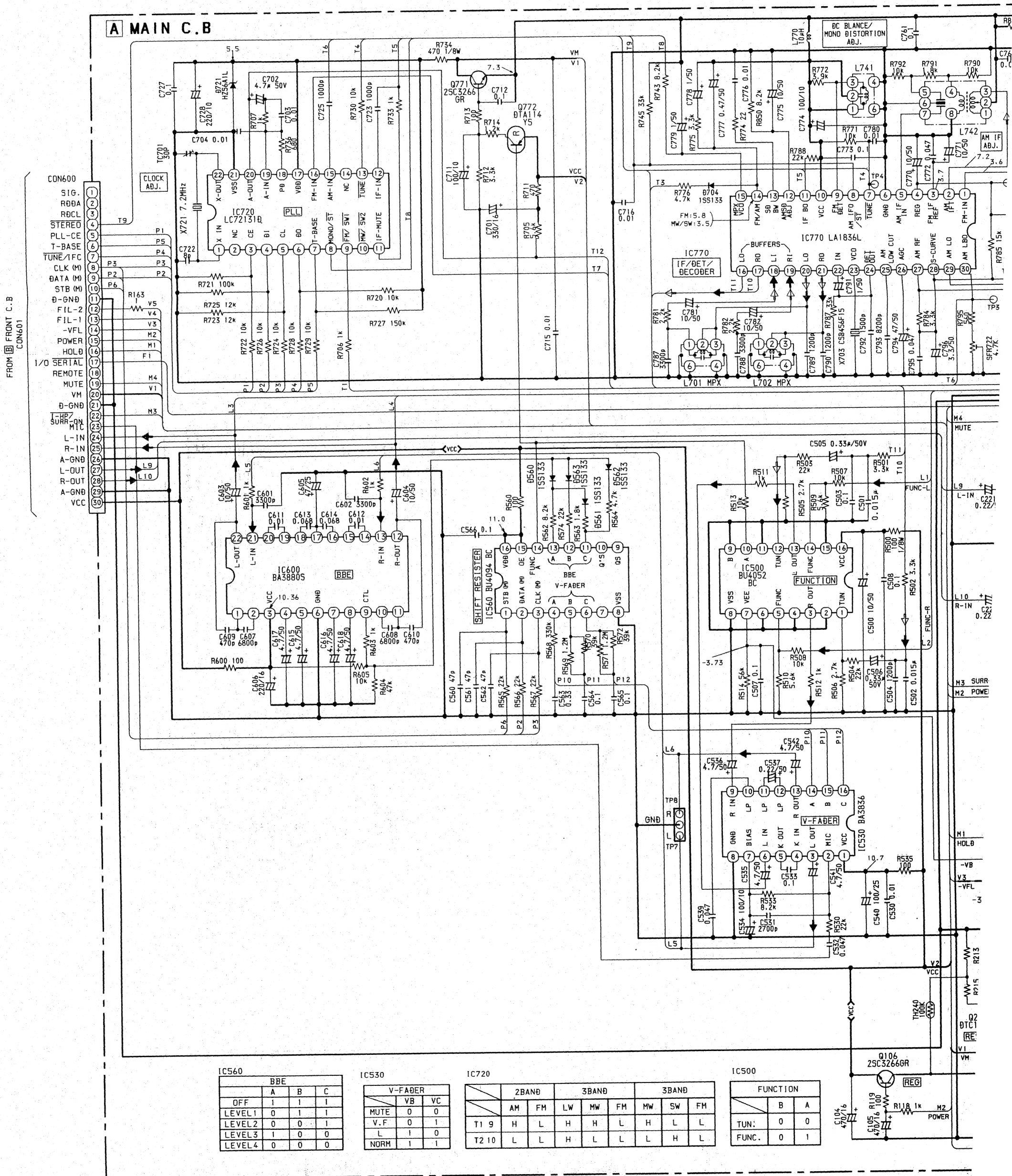




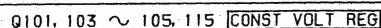




SCHEMATIC DIAGRAM-1 (MAIN)

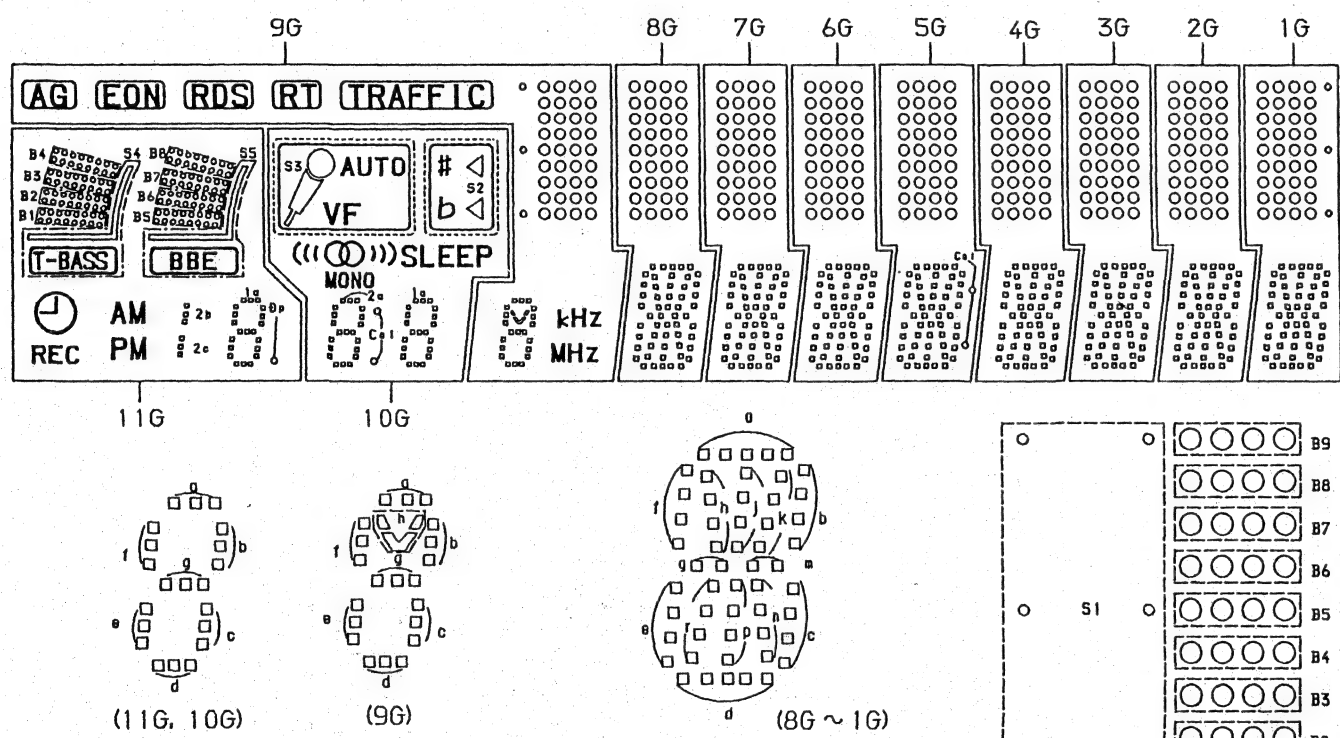






FL (BJ451GK) GRID ASSIGNMENT / ANODE CONNECTION

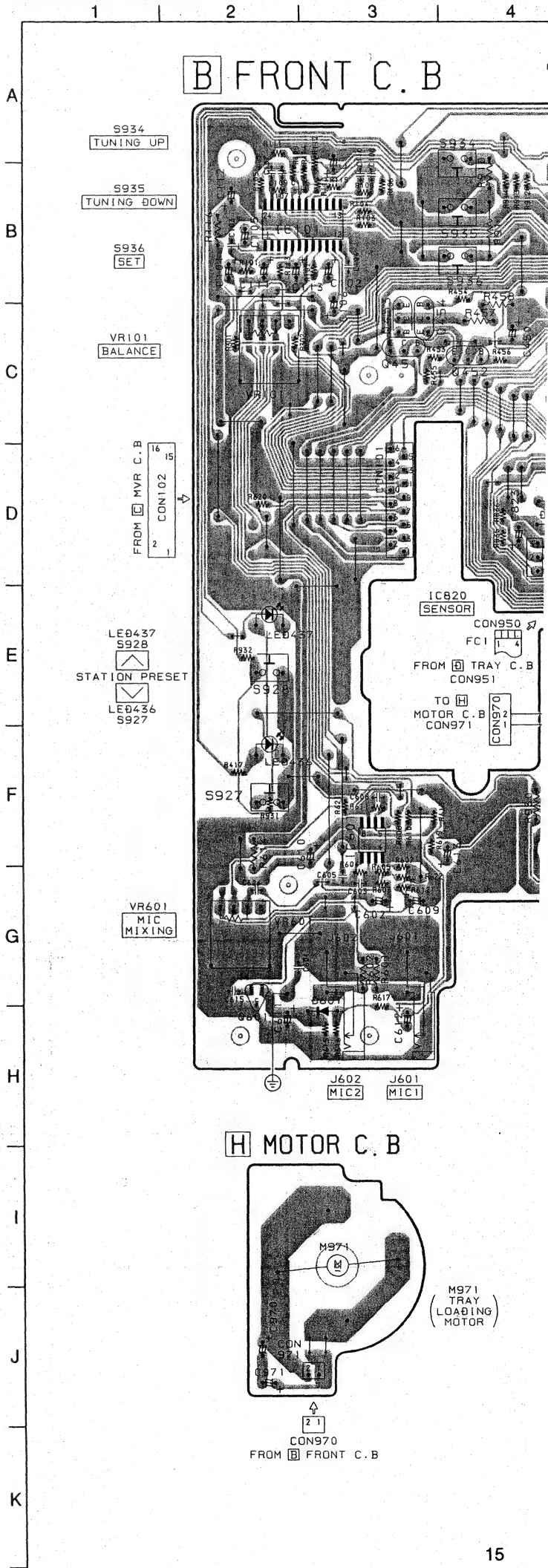
GRID ASSIGNMENT



ANODE CONNECTION

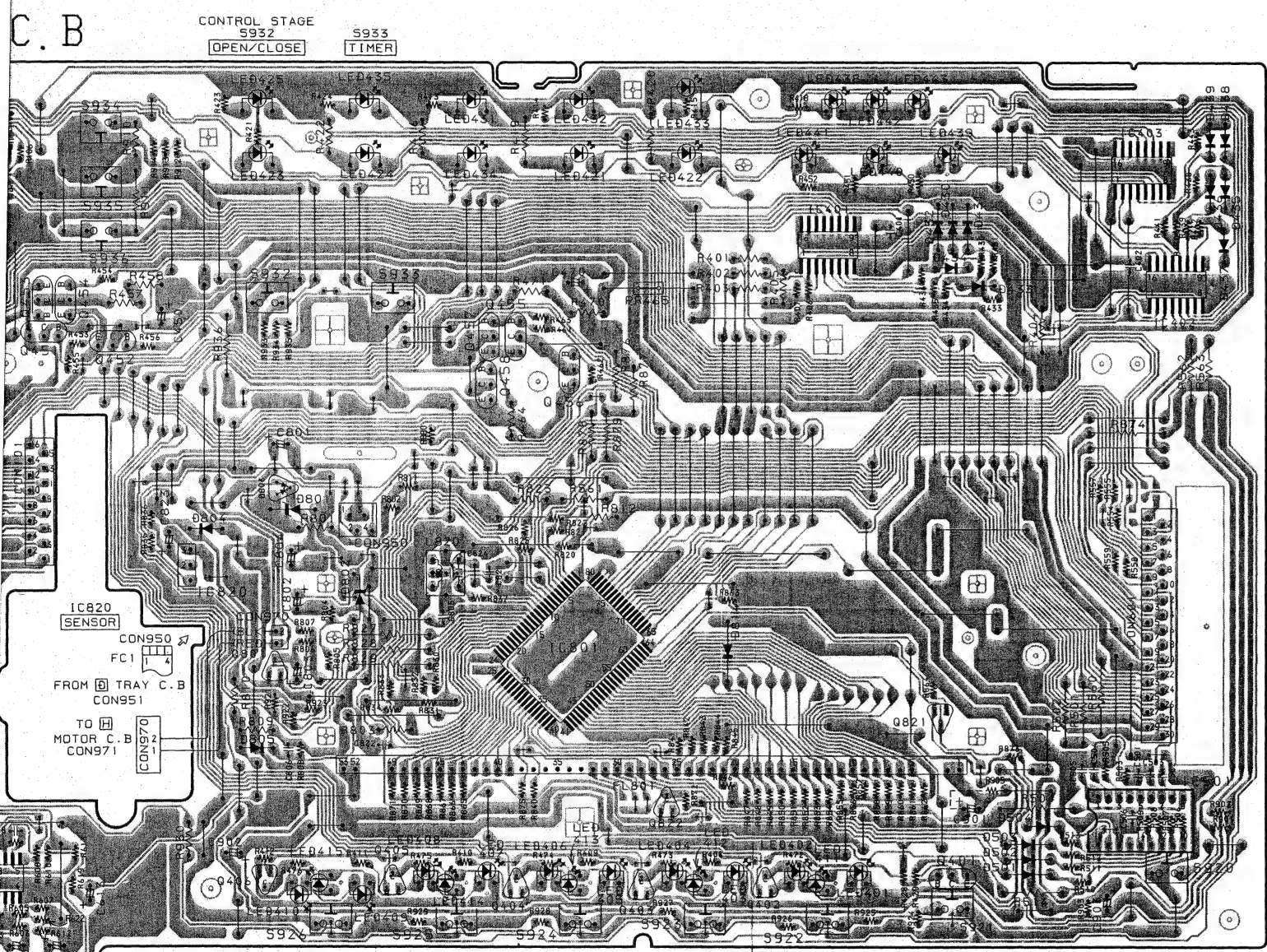
	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	2b, 2c	S3	B9	B9	B9	B9	B9	B9	B9	B9	B9
P2	1a	AUTO	B8	B8	B8	B8	B8	B8	B8	B8	B8
P3	1b	△(High)	B7	B7	B7	B7	B7	B7	B7	B7	B7
P4	1f	△(Low)	B6	B6	B6	B6	B6	B6	B6	B6	B6
P5	1g	((( )))	B5	B5	B5	B5	B5	B5	B5	B5	B5
P6	1c	SLEEP	B4	B4	B4	B4	B4	B4	B4	B4	B4
P7	1e	MONO	B3	B3	B3	B3	B3	B3	B3	B3	B3
P8	1d	○	B2	B2	B2	B2	B2	B2	B2	B2	B2
P9	-	2a	B1	B1	B1	B1	B1	B1	B1	B1	B1
P10	-	2b	TRAFFIC	a	a	a	a	a	a	a	a
P11	B8	2f	RT	h	h	h	h	h	h	h	h
P12	B7	2g	RDS	j	j	j	j	j	j	j	j
P13	B6	2c	EON	k	k	k	k	k	k	k	k
P14	B5	2e	AG	b	b	b	b	b	b	b	b
P15	B4	2d	h	f	f	f	f	f	f	f	f
P16	B3	1a	a	m	m	m	m	m	m	m	m
P17	B2	1b	b	g	g	g	g	g	g	g	g
P18	B1	1f	f	c	c	c	c	c	c	c	c
P19	AM	1g	g	e	e	e	e	e	e	e	e
P20	PM	1c	c	r	r	r	r	r	r	r	r
P21	REC	1e	e	p	p	p	p	p	p	p	p
P22	REC	1d	d	n	n	n	n	n	n	n	n
P23	-	Col (Low)	KHz	d	d	d	d	d	d	d	d
P24	Op	Col (High)	MHz	-	-	-	col	-	-	-	-
P25	-	-	S1	-	-	-	-	-	-	-	S1
P26	S4	-	-	-	-	-	-	-	-	-	-
P27	S5	-	-	-	-	-	-	-	-	-	-
P28	-	S2	-	-	-	-	-	-	-	-	-

WIRING-2 (FRONT)

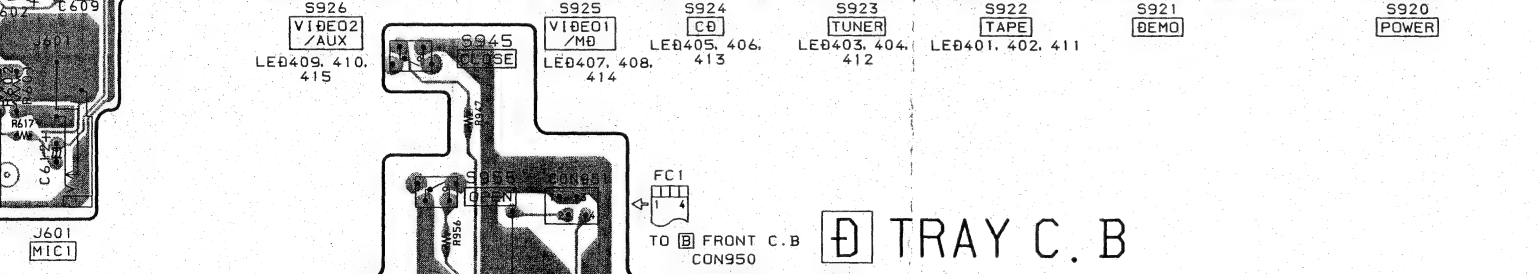
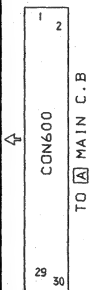




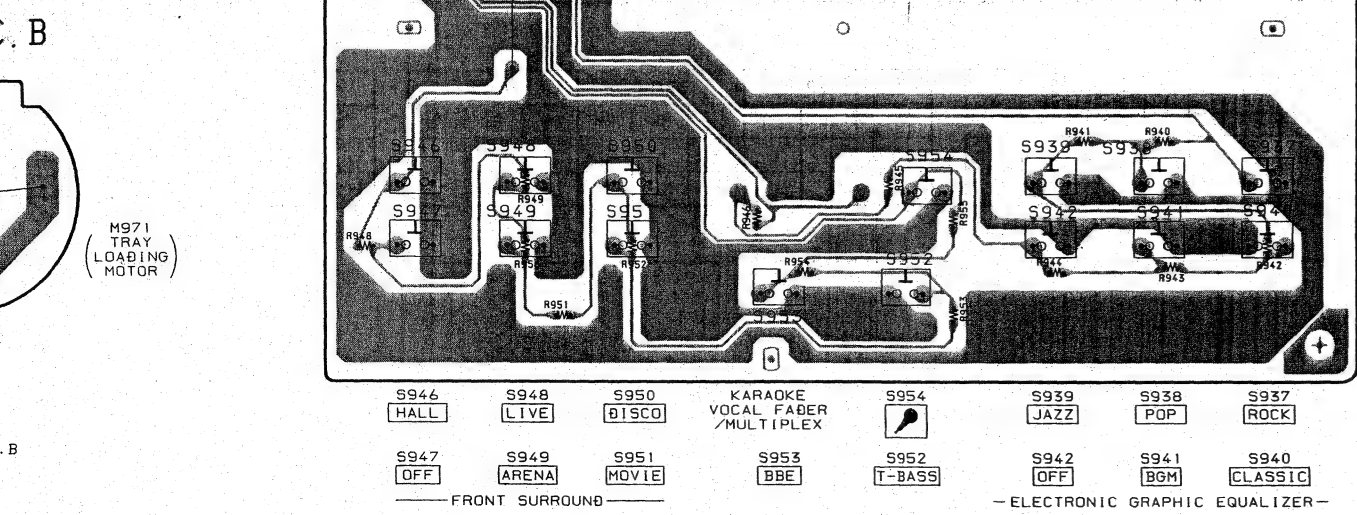
C.B



- LE0423 BGM
- LE0424 CLASSIC
- LE0434 JAZZ
- LE0421 POP
- LE0422 ROCK
- LE0441 SCH LOGIC
- LE0440 PHANTOM
- LE0439 NORMAL
- LE0425 ARENA
- LE0435 MOVIE
- LE0431 HALL
- LE0432 LIVE
- LE0433 DISCO
- LE0438, 442, 443 BOLBY PRO LOGIC
- SURROUND

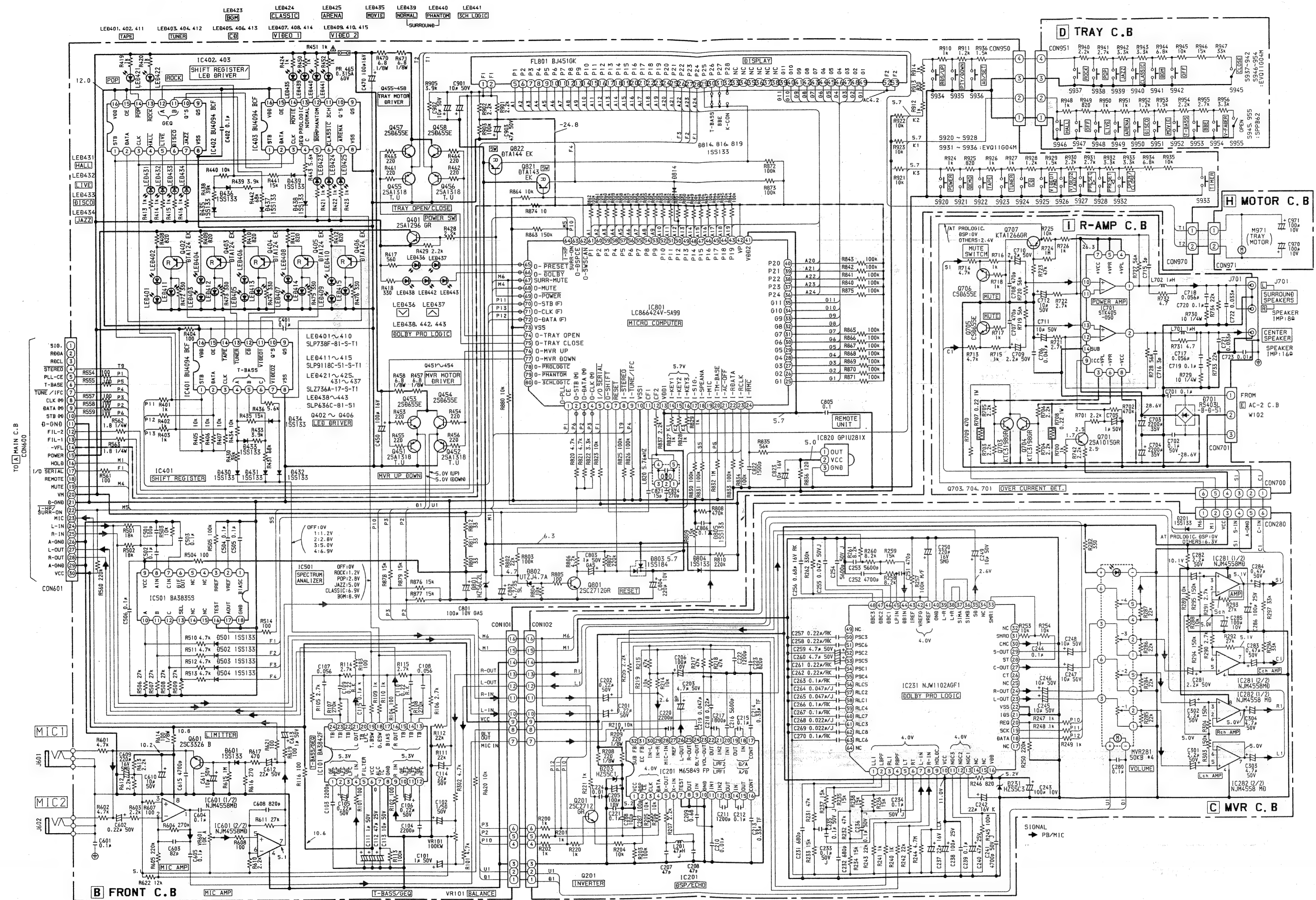


C.B



C.B

SCHEMATIC DIAGRAM-2 (FRONT)

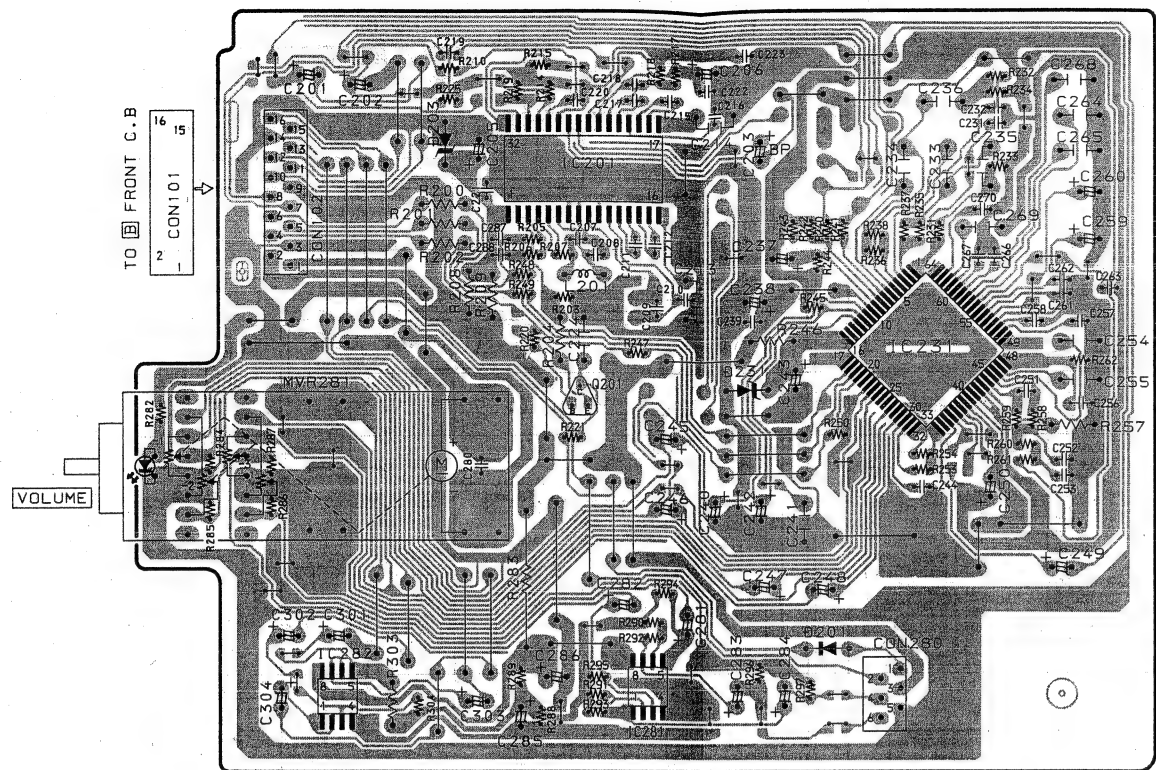




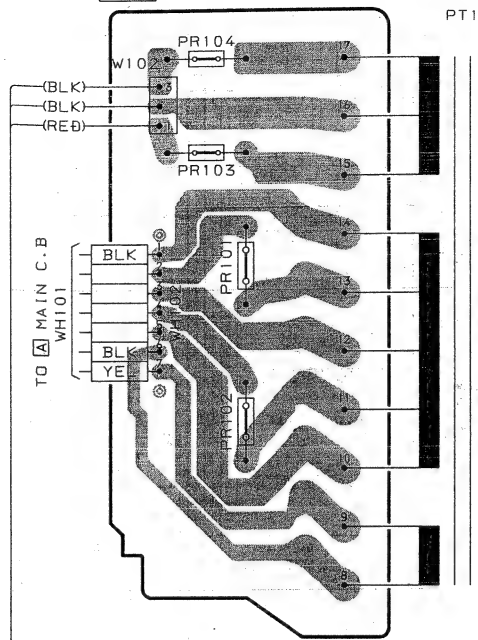
1 2 3 4 5 6 7 8 9 10 11 12 13 14

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K

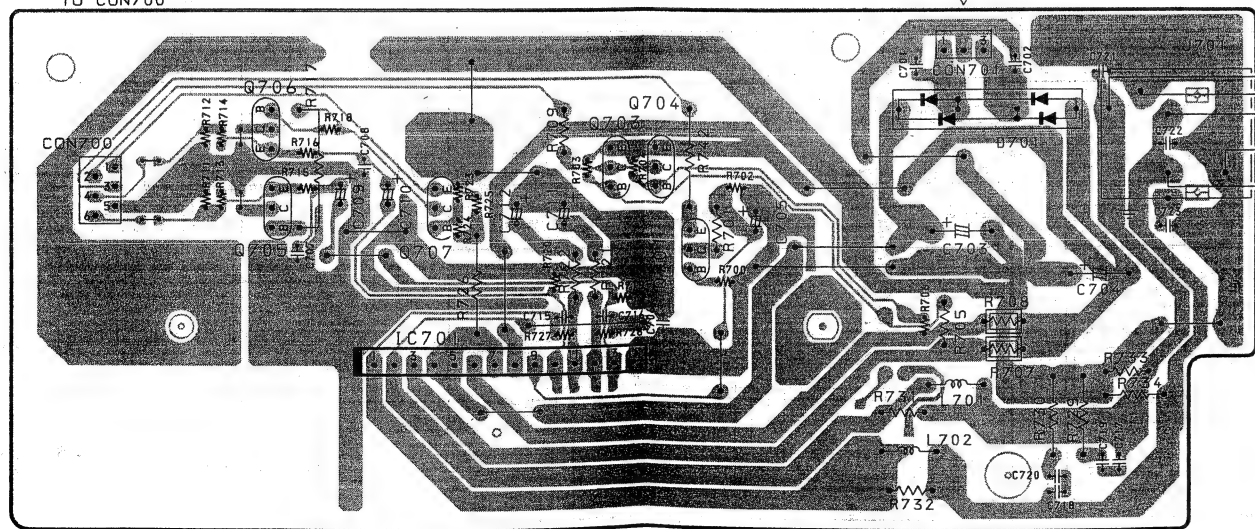
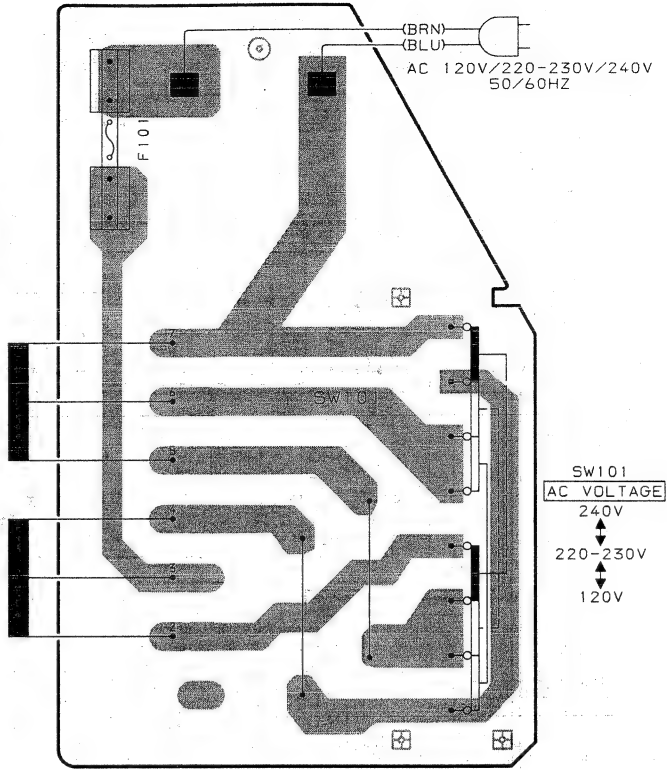
C MVR C. B



E AC-2 C. B



G PT-HC. B



I R-AMP C.B

CENTER SPEAKER  
IMP: 8Ω

R  
SURROUND  
SPEAKERS  
SPEAKER  
IMP: 16Ω

L

# IC DESCRIPTION

## IC, NJW1102F

Pin No.	Pin Name	I/O	Description
1	LLI	I	Lch BPF in.
2	LBPF	O	Lch BPF feed back out.
3	RLI	I	Rch BPF in.
4	RBPF	O	Rch BPF feed back out.
5	LT	O	Lch selector #1 out.
6	RT	O	Rch selector #1 out.
7	LIN	I	Lch signal input.
8	RIN	I	Rch signal input.
9	HOLDC	I	Auto input balance control.
10	VCC	—	Power supply.
11~13	NGC 3~1	I	Noise sequencer control.
14,15	NC	—	Not connect.
16	VDD	—	Power supply.
17	NC	—	Not used.
18	DATA	I	Serial data input.
19	SCK	I	Serial clock input.
20	REQ	I	Serial request (strobe) input.
21	IDS	I	IC select sw.
22	VSS	—	GND.
23	LOUT	O	Lch serial output.
24	ROUT	O	Rch serial output.
25	AUX1	O	AUX1 output (serial data change parallel output).
26	CT	O	Cch output (before trimmer).
27	C-OUT	O	Cch output (after trimmer).
28	ST	O	Sch output (before trimmer).
29	S-OUT	O	Sch output (after trimmer).
30	CMC	I	Center mode control.
31	SMRO	O	Sch amp (front L,R mix) output.
32	NC	—	Not used.
33	SMRI	I	Sch amp (front L,R mix) input.
34	AUX2	O	AUX2 output (serial data change parallel output).
35	SD	O	Selector #2 output (to delay IC).
36	SIMBB	I	Selector #2 input B (L-R).
37	SIMBA	I	Selector #2 input A (L+R).
38	L+R	O	L+R ch output.
39	L-R	O	L-R ch output.
40	GND	—	Gnd.
41	VREF	I	VREF in.
42	VREFG	O	Vref out.
43	IREF	I	Iref in.
44	DBIBN	O	Output to modify dolby B IC (included NJW1102).
45	LPIN	I	From delay input.
46~48	DBC 1~3	I	Dolby B NR control.
49	NC	—	Not used.
50~55	PSC 1~6	I	Dual time constant and threshold switches control.
56~63	RLC 1~8	I	Full-wave rectifier and log difference amp control.
64	NC	—	Not used.

See the NSX-H9/H90(S/M Code No. 09-966-141-50T)  
for the IC BLOCK DIAGRAM below.

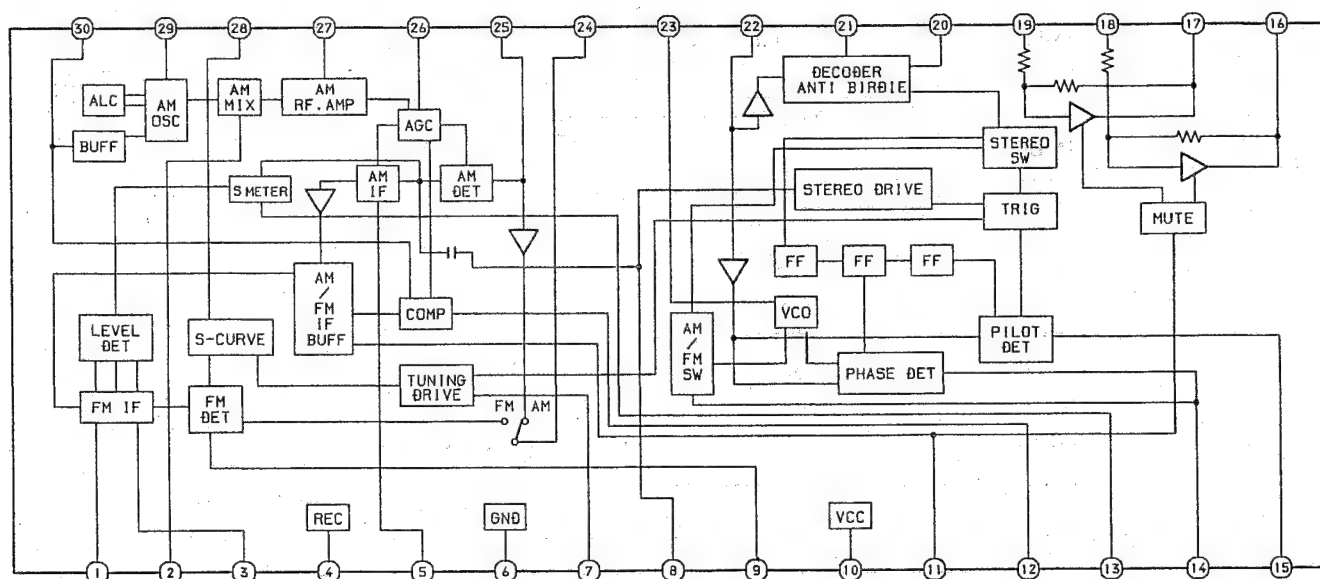
NSX-H9/H90	NSX-AVH9
M65849FP	M65849FP
BA3830S	BA3830S
BA3836	BA3836
BA3835S	BA3835S
BA3842F	BA3842F
LC7213D	LC7213D

See the NSX-H9/H90 (S/M Code No. 09-966-141-50T)  
for the IC DESCRIPTION below.

NSX-H9/H90	NSX-AVH9
LC866424V-5A62	LC866424V-5A99

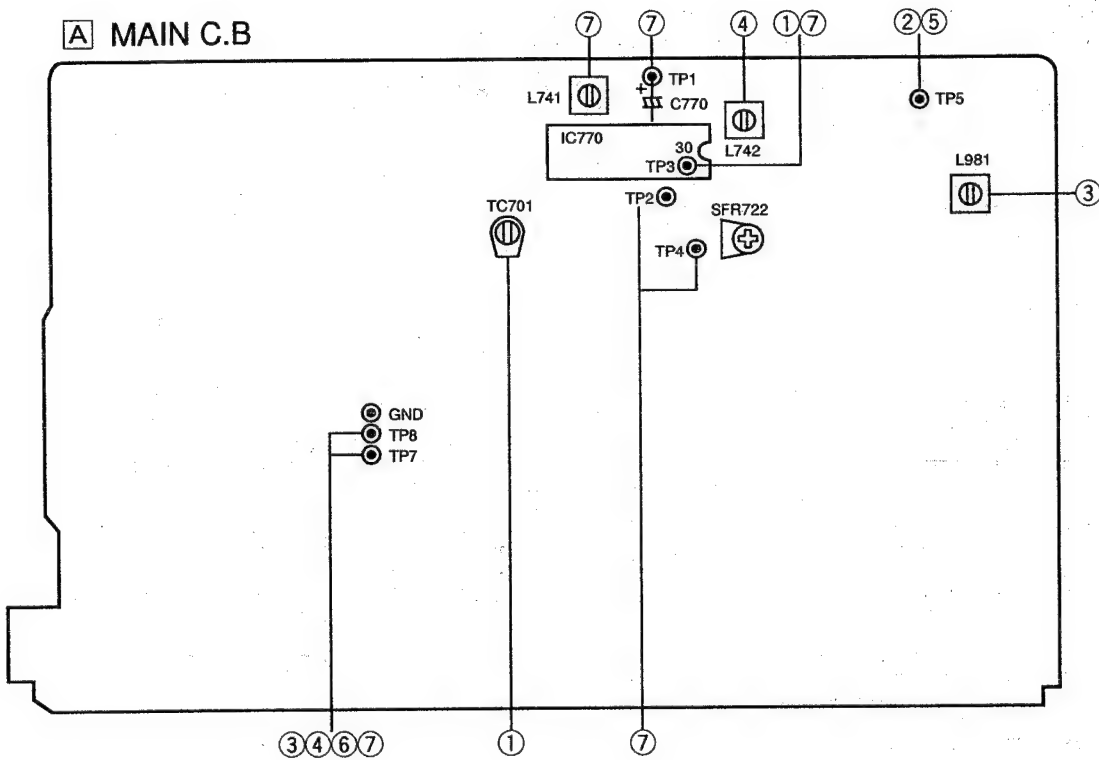
## IC BLOCK DIAGRAM

IC, LA1836





ELECTRICAL ADJUSTMENT



TUNER SECTION

1. Clock Frequency Adjustment  
Setting: • Test point : TP3(CLK)  
• Adjustment location : TC701  
Method: Set to AM 1710kHz and adjust TC701 so that the test point becomes 2160kHz  $\pm$  0.01kHz.
2. AM VT Check  
Setting: • Test point : TP5  
Method: Set to AM 1710kHz and check the test point is 6.3  $\pm$  1.0V.
3. AM Tracking Adjustment  
Settings: • Test point : TP7(Lch), TP8(Rch)  
• Adjustment location : L981  
Method: Set to AM 1000kHz and adjust L981 so that the test point becomes maximum.
4. AM IF Adjustment  
Setting: • Test point : TP7(Lch), TP8(Rch)  
L742 ..... 450kHz

5. FM VT Check  
Setting: • Test point : TP1  
Method: Set to FM 87.5MHz and check that the test point is more than 1.5V.  
Then set to FM 108MHz and check that the test point is less than 8.2V.
6. FM Tracking Check  
Setting: • Test point : TP7(Lch), TP8(Rch)  
Method: Check that the test point is 3 ~ 12dB and distortion is less than 3% at FM98.0MHz.
7. DC Balance / MONO Distortion Adjustment  
Settings: • Test point : TP1, TP2 (DC Balance)  
TP7(Lch), TP8(ch) (Distortion)  
• Adjustment location : L741  
• Input level : 54dB  
Method: Set to FM 98.0MHz and adjust L741 so that the voltage between TP3 and TP4 becomes 0V  $\pm$  0.04V.  
Next check that the distortion is less than 1.3%.

PRACTICAL SERVICE FIGURE

TUNER SECTION

<FM SECTION>

IHF Sensitivity: Less than 10dB  
[at 87.5MHz]  
(THD 3%) Less than 11dB  
[at 98.0/108.0MHz(HE)]  
Less than 8dB  
[at 98.0/108.0MHz(HR)]

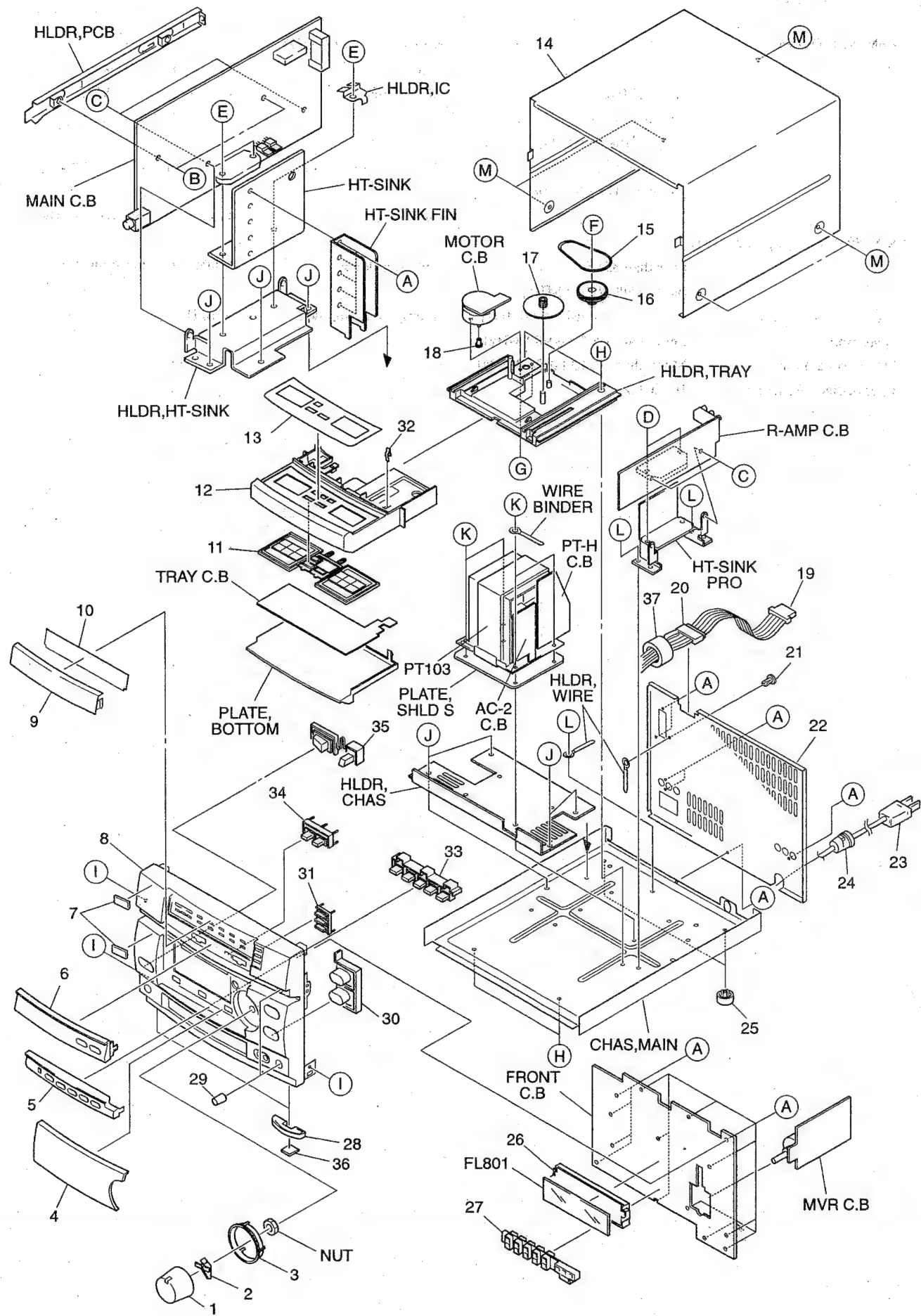
S/N 50dB Quieting sensitivity:

Less than 35dB  
[at 87.5/98.0/108.0MHz]  
Signal to noise ratio: More than 54dB[at 98.0MHz]  
Distortion: Less than 1.5% [at 98.0MHz]  
Stereo separation: More than 25dB [at 98.0MHz]  
Intermediate frequency: 10.7MHz

<AM(MW) SECTION>

Sensitivity: 48 ~ 62dB [at 603kHz]  
(S/N 20dB) 47 ~ 59dB [at 999kHz]  
47 ~ 59dB [at 1404kHz]  
Signal to noise ratio: More than 36dB[at 999kHz]  
Distortion: Less than 1.5% [at 999kHz]  
Auto stop level: 50dB  $\pm$  10dB[at 999kHz]  
Intermediate frequency: 450kHz

MECHANICAL EXPLODED VIEW 1 / 1



MECHANICAL PARTS LIST 1 / 1

DESCRIPTION で判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
1	86-NT1-021-019		KNOB,RTRY VOL	30	86-NT1-009-019		KEY,UP/DOWN
2	86-NT1-022-019		REFLECTOR,VOL	31	86-NT1-011-019		KEY,RDS
3	86-NT1-026-019		RING,VOL	32	81-MT3-211-019		LEVER,OPEN
4	86-NT1-028-019		WINDOW,DISPLAY	33	86-NT1-020-019		KEY,ASSY FUN
5	86-NT1-006-019		PANEL,FUN	34	86-NT1-010-010		KEY,PRO
6	86-NT1-005-019		PANEL,GEQ	35	86-NT1-008-019		KEY,POWER
7	82-NE8-032-019		BADGE AIWA 27.5	36	80-VT1-202-010		FELT,12.5-15.5-2
8	86-NTM-001-110		CABI,FR	37	87-003-317-010		F-BEAD,15-25-15 E2515MRT
9	86-NT1-027-019		WINDOW,GEQ	A	87-067-703-019		BVT2+3-10 (W/O SLOT)
10	86-NTM-003-010		PLATE,PRO	B	87-078-084-019		BVTT+3-6 W,CONVEX
11	86-NT1-013-019		KEY,GEQ	C	87-067-633-019		BVT2+3-8 W/CONVEX
12	86-NT1-004-019		TRAY,CONTROL	D	87-067-581-019		BVT2+3-15 W/O SLOT
13	86-NTM-004-010		PLATE,TRAY 21	E	87-067-822-019		BVT2+3-20 W/O SLOT
14	86-NT1-003-019		CABI,STEEL	F	87-861-095-419		VFT2+3-8 SLOT
15	80-VW1-217-010		BELT,SQ 1.5	G	87-261-073-419		V+2.6-6
16	82-NT1-205-11K		PULLEY,LOADING (*)	H	87-067-584-019		BVT2+3-6 W/O SLOT
17	82-NT1-204-01K		GEAR,LOADING	I	87-591-094-419		QIT + 3 - 6 GOLD
18	80-VW1-204-010		PULLEY,MOTOR	J	87-571-092-419		VIT+3-4
19	86-NT2-655-010		CORD,FG15P	K	87-067-975-010		S-SCREW,IT+4-8 SWCH12A
20	89-VT5-202-010		BUSHING,CORD	L	87-067-688-019		BVTT +3-6
21	87-084-077-019		NYLON RIVET DIA3.5-4.5	M	87-067-641-019		UTT2+3-8 W/O SLOT BLK
22	86-NTM-011-010		PANEL,REAR HEJBNM<HE>				
22	86-NTM-017-010		PANEL,REAR HRJBNM<HR>				
23	87-050-079-019		AC-CORD ASSY,E				
24	87-085-185-019		BUSHING,AC CORD E				
25	87-085-213-019		FOOT, H12.5				
26	86-NT1-203-019		GUIDE,FL				
27	86-NT1-202-019		GUIDE,LED				
28	85-NC1-019-019		RING,FOOT				
29	86-NT1-023-019		KNOB,RTRY MIC				

## ■ ACCESSORIES / PACKAGE LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	86-NTM-901-019		IB, H (ECA)
2	85-NT3-661-019		RC-T506
3	87-006-225-019		AM LOOP ANT NC2
4	87-043-115-019		ANT, FEEDER FM
5	87-099-789-019		PLUG, ADPTR IR44

MODEL NO.

# SX-NAVH9

## SPEAKER PARTS LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	86-NSM-001-010		PANEL FR
2	86-NSM-004-010		GRILLE FRAME ASSY
3	86-NS2-602-010		SPKR W 140
4	86-MS2-603-110		SPKR TW 60
5	86-NSM-610-010		TERMINAL ASSY
6	83-096-614-010		SPKR CORD

MODEL NO.

# SX-R230

## SPEAKER PARTS LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	85-NSX-001-010		PANEL FR
2	85-NSX-005-010		GRILLE FRAME ASSY
3	85-NSX-601-010		SPKR
4	81-VSA-010-010		SPKR CORD

MODEL NO.

# SX-C400

## SPEAKER PARTS LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	85-NSY-001-010		PANEL FR
2	85-NSY-010-010		GRILLE FRAME ASSY
3	85-NSY-602-010		SPKR
4	83-NSM-010-010		SPKR CORD

# REFERENCE NAME LIST

## ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	P.T.R, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER
サージサプレッサ	SERGESUPPRESSOR
セラコン	CAP,CERA

## MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL
ジグアーム	ARM,SHAFT
ジグガイド	GUIDE,SHAFT
ストラップ	STRAP
トクナベ	S-SCREW
ヒンジ	HINGE
ヒンジビス	S-SCREW
ビスセレート	SCREW,SERRART

サービス技術ニュース	
番 号	連絡内容
G — —	
G — —	
G — —	

**アイワ株式会社**  
**AIWA CO.,LTD.**

920074, 750038

Tokyo Japan

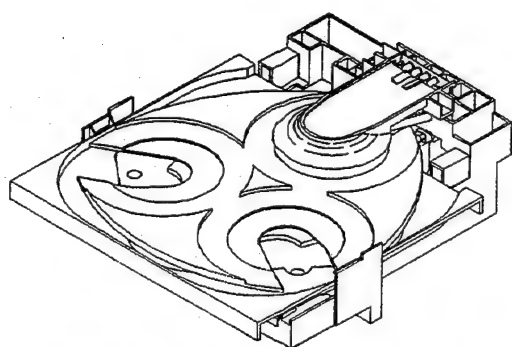
# aiwa



VIDE-V16442



4ZG-1  
4ZG-1A  
4ZG-1B  
4ZG-1Z



CD MECHANISM

- BASIC CD MECHANISM: KSM-2 131 BAM  
3ZG-2 C1 / 3ZG-2 C2 / 3ZG-2 C5
- TYPE: English

BASIC NAME		DERIVATION NAME							
4ZG-1	*1	—	—	—	—	WR	—	—	—
	*2	G	D	F	R	—	V3L	V4L	V5
4ZG-1A		G	D	—	—	—	—	—	—
4ZG-1B		G	D	—	—	—	—	—	—
4ZG-1Z		—	D	—	—	—	—	—	—

- \*1, \*2, have the same BASIC NAME but the board structures are different.  
The CD BLOCK, VCD BLOCK of the WR are shown on the SERVICE MANUAL of each DERIVATION NAME.
- This mechanism has various derivation. Derivation name is indicated by the Service Manual for each model.
- For different version of mechanism that may be introduced since the issue of this manual, only the new or modified points be discussed.

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## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainituilla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylitäville näkymättömälle lasersäteilylle.

### VARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

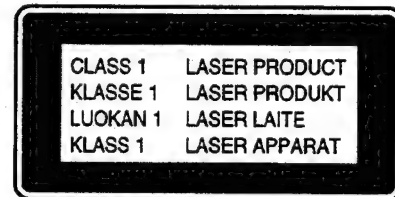
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.





This is the SERVICE MANUAL for the BASIC CD MECHANISM of BASIC NAME: 4ZG-1. This BASIC NAME includes the following models as shown under the SUFFIX name: DERIVATION NAME. Please use this manual with the separate SERVICE MANUAL for DERIVATION NAME.

BASIC CD MECHANISM: 4ZG-1 AGD

SUFFIX  
(DERIVATION NAME)

BASIC NAME: 4ZG-1 (ORIGINAL MODEL)  
4ZG-1A (SONY IC MODEL)  
4ZG-1B (TOSHIBA IC MODEL)  
4ZG-1Z (SANYO IC MODEL)

BASIC NAME	DERIVATION NAME							
4ZG-1	*1	—	—	—	—	WR	—	—
	*2	G	D	F	R	—	V3L	V4L V5
4ZG-1A		G	D	—	—	—	—	—
4ZG-1B		G	D	—	—	—	—	—
4ZG-1Z		—	D	—	—	—	—	—

- NOTE:**
- \*1 and \*2 have the same BASIC NAME but the board structures are different.
  - The CD BLOCK, VCD BLOCK of the WR is shown on the SERVICE MANUAL of each DERIVATION NAME.
  - Model 4ZG-1 A, B and Z has "F" as the standard installation.

BOARD NAME BASIC NAME	3CD C.B	LED C.B	T-T C.B	MOTOR C.B	MAIN VCD C.B	CD MECHA C.B	VCD C.B	DRIVE C.B
4ZG-1 *1	—	—	○	—	—	—	—	○
4ZG-1 *2	—	○	○	—	○	○	○ (EXCEPT V5)	—
4ZG-1A	○	○	○	○	—	—	—	—
4ZG-1B	○	○	○	○	—	—	—	—
4ZG-1Z	○	○	○	—	—	—	—	○

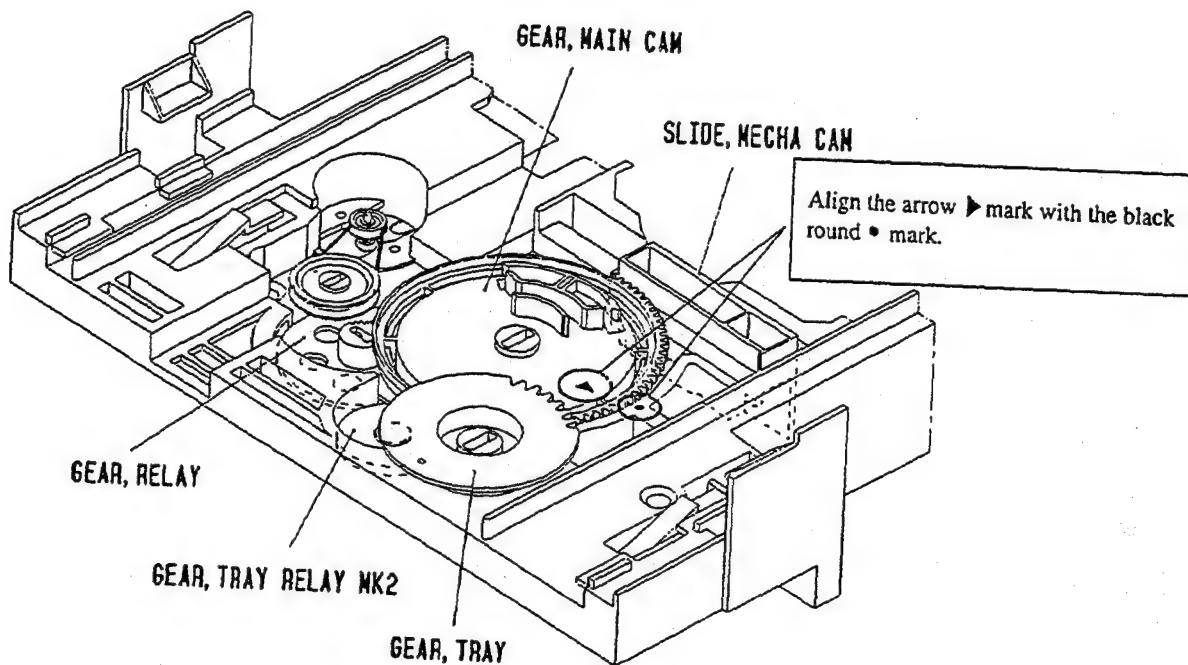
## DERIVATION NAME

- G: Supporting the CD graphic feature  
D: Digital output function  
F: CD WINDOW Flash function (LED: AMBER/GREEN)  
R: Round Tray  
WR: With out Video CD and CD graphic board.  
V3L: Supporting the video CD function PAL  
V4L: Supporting the video CD function PAL  
V5: Supporting the video CD function

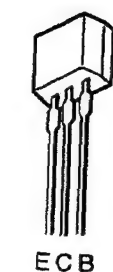
## How to Adjust the Rotating Phase of the Gear, Main Cam

- 1) Push down the hooking catch of the CHAS. MECH, and remove the TRAY.
- 2) Align the arrow mark of the Gear, Main Cam with the black round mark of the CHAS. MECHA as shown below.
- 3) Confirm that the Slide, Mech Cam is located in the right position, then insert the TRAY gently.

**Caution:** If the rotating phase of the Gear, Main Cam is incorrectly adjusted, the chucking operation and tray movement will have malfunction.



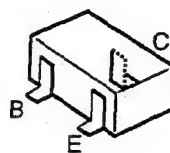
## TRANSISTOR ILLUSTRATION



2SA933



2SA1296  
2SA1318  
2SC1815  
2SC2001  
2SD655  
2SD2172

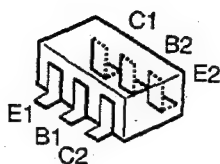


2SA1037  
2SA1162  
2SA1362  
2SA1576  
2SC2712  
2SC3326  
2SC4081  
2SD1383

DTA123JK  
DTA144TK  
DTC114TK  
DTC123JK  
DTC124XK  
DTC143TK  
RN1441



2SD2005



HN1C03

# 4ZG-1

## ELECTRICAL MAIN PARTS LIST

DESCRIPTION で判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC				89-327-125-089			C-TR, 2SC2712GR<EXCEPT WR>
	SC-L48-000-000		IC, CL480<V3L>	89-112-965-089			TR, 2SA1296GR<EXCEPT WR>
	S4-730-42X-010		IC, HD6473042F16(5EULF6)<V4L>	87-026-608-089			C-TR, DTC 123 JK<F>
	SC-XD1-178-Q00		IC, CXD1178Q<V3L>	89-324-585-010			TR, 2SC2458<V3L>
	SA-T27-C51-2R1		IC, AT27C512R-15JC<V3L>	89-333-266-089			C-TR, 2SC3326B<EXCEPT V5, WR>
	SX-D11-86X-010		IC, CXD1186CR(5EUNFC)<V4L>	87-026-580-089			C-TR, DTA123JK<EXCEPT WR>
	SC-008-K81-R10		IC, BR6265AF-10LL(5EUMFS)<V4L>	87-026-470-089			TR, HNIC03 F B<V5>
	ST-C51-425-6BJ		IC, TC514256BJ-70<V3L>	89-318-155-089			TR, 2SC1815 GR<V5>
	SC-032-K81-MA0		IC, MSM5256CFP-70LL(5EUMFS)<V4L>	DIODE			
	87-001-948-080		IC, PST572CMT(5EUBFP)<V4L>	S0-041-480-000			DIODE, 1N4148<V3L>
	SD-493-07X-010		IC, HD49307(5EUNFH)<V4L>	S1-305-700-283			DIODE, DA115(5EDQDD)<V4L>
	SM-C68-MC7-05C		IC, MC68HC705C8ACP<V3L>	S0-240-010-000			DIODE, 1N4001<V3L>
	87-002-259-080		IC, UPD6376GS<V3L>	SA-P20-2UX-010			DIODE, DAP202U(5EDQDD)<V4L>
	87-001-607-080		IC, BA4558F<V3L>	87-002-608-089			DIODE, DSF10TC<V4L>
	82-NV1-628-080		IC, CXA1645M(5EUBFC)<V3L, V4L>	87-017-430-090			DIODE, RK14<V3L>
	SP-D63-210-010		IC, UPD63210GT-E1(5EUNFU)<V4L>	87-020-465-089			DIODE, ISS133<EXCEPT V5, WR>
	SS-N74-HCU-04D		IC, SN74HCU04DR<V3L>	SM-T22-7B0-000			ZENER, MT22.7B<V3L>
	S1-010-XXX-010		IC, UPD61010AGD-LBD(5EULF6)<V4L>	87-020-027-089			C-DIODE 1SS184<V5>
	SC-170-CXX-010		IC, TC170C100AF-001(5EUKFT)<V4L>	87-A40-180-049			C-DIODE SB07-015 C<V5>
	SC-256-KG1-T10		IC, TC514260BJ-70(5EULMD)<V4L>	87-A40-196-089			C-ZENER UD26.2 B<V5>
	SC-000-002-000		IC, TC514260BJ-70(5EULMD)<V4L>	MAIN VCD C.B<V3L, V4L>			
	SL-C29-32X-010		IC, TLC2932IPW(5EUNFT)<V4L>	C101	87-012-140-089		C-CAP, S 470P-50 CH<EXCEPT WR>
	87-017-745-019		IC, CXA1782BQ<EXCEPT V5, WR>	C102	87-010-194-089		C-CAP, S 0.047-25 F
	87-002-783-110		IC, CXD2500BQ<EXCEPT WR>	C103	87-010-178-089		C-CAP, S 1000P-50 B
	87-A20-257-049		IC, BA6791FP<V5>	C104	87-012-156-089		C-CAP, S 220P-50 CH
	87-070-120-049		IC, BA6897 FP<EXCEPT V5, WR>	C105	87-010-384-089		CAP, E 100-25 SME
	87-070-429-019		IC, NJM2244L<EXCEPT V5, WR>	C106	87-010-196-089		C-CAP, S 0.1-25 F
	87-002-532-019		IC, PQ05RF11<V5>	C107	87-010-314-089		C-CAP, S 22P-50 CH
	87-017-825-019		IC, GP1F32T<D, V5>	C108	87-010-314-089		C-CAP, S 22P-50 CH
	87-001-873-019		IC, LB1644<V5>	C110	87-010-221-089		CAP, E 470-10 11L
	84-ZG1-639-010		C-IC, MB89627<V5>	C111	87-010-320-089		C-CAP, S 68P-50 CH
	ST-C74-HC2-570		IC, TC74HC257<V3L>	C112	87-010-196-089		C-CAP, S 0.1-25 F<V4L>
	83-NFT-618-010		IC, UPD78044BGF<V3L>	C112	87-016-463-089		C-CAP, S 0.33-16 B<V3L>
	85-MAR-614-010		IC, UPD78044BGF-025<V4L>	C113	87-010-260-089		CAP, E 47-25 SME
	87-070-430-019		IC, LA6530<EXCEPT V5, WR>	C114	87-010-498-049		CAP, E 10-16 GAS
	87-017-543-089		IC, PST 600D<V5>	C115	87-010-498-049		CAP, E 10-16 GAS<G>
	87-A20-255-049		C-IC, SN74LV373NS<V5>	C116	87-010-196-089		C-CAP, S 0.1-25 F
	87-A20-251-049		C-IC, BR6265BF-N10SL<V5>	C117	87-010-197-089		C-CAP, S 0.01-25 B
	87-A20-252-049		C-IC, SN74LV00NS<V5>	C118	87-010-553-049		CAP, E 47-16 GAS<V4L>
	87-A20-253-049		C-IC, SN74LV04NS<V5>	C119	87-010-553-049		CAP, E 47-16 GAS
	87-A20-254-049		C-IC, SN74LV32NS<V5>	C120	87-010-197-089		C-CAP, S 0.01-25 B
	87-A20-244-010		C-IC, CL484<V5>	C121	87-010-384-089		CAP, E 100-25 SME<V4L>
	87-020-881-089		IC, NJM78L05A<EXCEPT V5, WR>	C122	87-010-320-089		C-CAP, S 68P-50 CH<D>
	87-A20-200-040		C-IC, HM514260CJ7/CLJ7<V5>	C123	87-010-401-089		CAP, E 1-50 SME
	87-017-888-089		IC, NJM4558MD<V4L>	C124	87-A10-011-019		CAP, E 2200-25 SMG
	84-ZG1-640-049		C-IC, LH5317<V5>	C125	87-010-322-089		C-CAP, S 100P-50 CH
	87-A20-256-049		C-IC, PQ20V25U<V5>	C126	87-010-178-089		C-CAP, S 1000P-50 B
	87-A20-247-019		C-IC, BU1417AK<V5>	C127	87-010-314-089		C-CAP, S 22P-50 CH<G>
	87-017-802-010		IC, LC7872E<G>	C128	87-010-320-089		C-CAP, S 68P-50 CH
	87-A20-248-049		C-IC, BU2173F<V5>	C129	87-010-263-089		CAP, E 100-10 SME<D>
	87-017-803-010		IC, LC32464P-80<G>	C130	87-010-197-089		C-CAP, S 0.01-25 B<D>
	87-A20-258-040		C-IC, SM5877AM<V5>	C131	87-010-197-089		C-CAP, S 0.01-25 B
TRANSISTOR				C132	87-010-196-089		C-CAP, S 0.1-25 F
	SC-408-1XX-010		TR, 2SC4081(5EQQ2S)<V4L>	C133	87-010-196-089		C-CAP, S 0.1-25 F
	S1-441-XXX-010		TR, RN1441-A(5EQQRN)<V4L>	C134	87-010-196-089		C-CAP, S 0.1-25 F
	SA-157-6XX-010		TR, 2SA1576(5EQQ2S)<V4L>	C135	87-010-196-089		C-CAP, S 0.1-25 F
	89-111-625-089		C-TR, 2SA1162GR<EXCEPT V5, WR>	C136	87-010-154-089		C-CAP, S 10P-50 CH<V4L>
	87-026-237-089		C-TR, DTC124XK<EXCEPT WR>	C201	87-010-382-089		CAP, E 22-25 SME
	87-327-125-089		C-TR, 2SC2712 GR<V5>	C202	87-010-197-089		C-CAP, S 0.01-25 B
	89-113-625-089		C-TR 2SA 1362 GR(TAPG)<V5>				

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C203	87-010-382-089		CAP,E 22-25 SME	C205	87-010-316-089		C-CAP,S 33P-50 CH
C204	87-010-381-089		CAP,E 330-16 SME	C206	87-010-499-049		CAP,E 22-6.3 GAS
C205	87-010-196-089		C-CAP,S 0.1-25 F	C207	87-010-197-089		C-CAP,S 0.01-25 B
C206	87-010-196-089		C-CAP,S 0.1-25 F	C208	87-010-197-089		C-CAP,S 0.01-25 B
C207	87-010-498-049		CAP,E 10-16 GAS<F>	C209	87-010-197-089		C-CAP,S 0.01-25 B
C208	87-010-405-089		CAP,E 10-50 SME	C210	87-010-197-089		C-CAP,S 0.01-25 B
C301	87-010-197-089		C-CAP,S 0.01-25 B	C211	87-010-197-089		C-CAP,S 0.01-25 B
C306	87-010-381-089		CAP,E 330-16 SME<V4L>	C212	87-010-318-089		C-CAP,S 47P-50 CH
C307	87-010-553-049		CAP,E 47-16 GAS	C301	87-010-549-049		CAP,E 47-6.3 GAS
C308	87-010-498-049		CAP,E 10-16 GAS	C302	87-010-549-049		CAP,E 47-6.3 GAS
C309	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C304	87-010-197-089		C-CAP,S 0.01-25 B
C310	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C305	87-010-197-089		C-CAP,S 0.01-25 B
C311	87-012-140-089		C-CAP,S 470P-50 CH<V4L>	C306	87-010-197-089		C-CAP,S 0.01-25 B
C312	87-012-140-089		C-CAP,S 470P-50 CH<V4L>	C307	87-010-197-089		C-CAP,S 0.01-25 B
C313	87-010-384-089		CAP,E 100-25 SME<V4L>	C308	87-010-197-089		C-CAP,S 0.01-25 B
C315	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C309	87-010-197-089		C-CAP,S 0.01-25 B
C316	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C310	87-010-197-089		C-CAP,S 0.01-25 B
C317	87-010-197-089		C-CAP,S 0.01-25 B	C311	87-010-197-089		C-CAP,S 0.01-25 B
C318	87-010-197-089		C-CAP,S 0.01-25 B	C312	87-010-197-089		C-CAP,S 0.01-25 B
C401	87-010-405-089		CAP,E 10-50 SME<G>	C313	87-010-318-089		C-CAP,S 47P-50 CH
C402	87-010-314-089		C-CAP,S 22P-50 CH<G>	C314	87-010-196-089		C-CAP,S 0.1-25 F
C403	87-010-315-089		C-CAP,S 27P-50 CH<G>	C315	87-010-196-089		C-CAP,S 0.1-25 F
C406	87-010-384-089		CAP,E 100-25 SME<G>	C316	87-010-549-049		CAP,E 47-6.3 GAS
C407	87-010-384-089		CAP,E 100-25 SME<G>	C317	87-010-314-089		C-CAP,S 22P-50 CH
C408	87-010-196-089		C-CAP,S 0.1-25 F<G>	C319	87-010-314-089		C-CAP,S 22P-50 CH
C409	87-010-196-089		C-CAP,S 0.1-25 F<G>	C320	87-010-196-089		C-CAP,S 0.1-25 F
CON6	83-NFT-628-019		CONN ASSY,8P<V3L>	C321	87-010-550-049		CAP,E 100-6.3 GAS
EM101	87-008-474-089		F-BEAD,EMI BL02RN1	C322	87-010-197-089		C-CAP,S 0.01-25 B
EM102	87-008-474-089		F-BEAD,EMI BL02RN1	C323	87-010-550-049		CAP,E 100-6.3 GAS
FC1	85-NFT-612-019		FF-CABLE,30P-1.0<V4L>	C324	87-010-197-089		C-CAP,S 0.01-25 B
FC2	88-912-131-219		FF-CABLE,12P 1.25	C401	87-010-197-089		C-CAP,S 0.01-25 B
FC3	85-MAR-617-019		FF-CABLE,6P-1.25	C402	87-010-550-049		CAP,E 100-6.3 GAS
J101	87-009-502-019		JACK,PIN 1PY EARTH	C403	87-010-197-089		C-CAP,S 0.1-25 F
L101	87-003-149-089		COIL,47UH	C404	87-012-140-089		C-CAP,S 470P-50 CH
L102	87-003-149-089		COIL,47UH	C405	87-010-322-089		C-CAP,S 100P-50 CH
L103	87-003-143-089		COIL,4.7UH	C406	87-012-140-089		C-CAP,S 470P-50 CH
L401	87-003-149-089		COIL,47UH<G>	C407	87-016-350-049		CAP,E 470-4 MA GAS
L402	87-003-149-089		COIL,47UH<G>	C408	87-010-196-089		C-CAP,S 0.1-25 F
M401	87-045-305-019		MOTOR, RF-500TB	C409	87-010-197-089		C-CAP,S 0.01-25 B
PR101	87-026-689-089		PROTECTOR,1A 60V 491	C410	87-010-197-089		C-CAP,S 0.01-25 B
SW201	87-036-109-019		SW,PUSH SPPB 61	C411	87-010-550-049		CAP,E 100-6.3 GAS
SW202	87-036-109-019		SW,PUSH SPPB 61	C412	87-010-197-089		C-CAP,S 0.01-25 B
X101	87-030-270-089		VIB,XTAL 16.9344MHZ	C413	87-010-314-089		C-CAP,S 22P-50 CH
X201	89-MX1-704-089		CERA LOCK(MU)3.9MHZ	C414	87-010-316-089		C-CAP,S 33P-50 CH
X401	80-JUC-602-089		VIB,XTAL 17.73MHZ<G>	C415	87-010-499-049		CAP,E 22-6.3 GAS
MAIN VCD C.B<V5>				C416	87-010-197-089		C-CAP,S 0.01-25 B
C101	87-010-197-089		C-CAP,S 0.01-25 B	C418	87-010-197-089		C-CAP,S 0.01-25 B
C102	87-010-550-049		CAP,E 100-6.3 GAS	C420	87-010-196-089		C-CAP,S 0.1-25 F
C103	87-010-318-089		C-CAP,S 47P-50 CH	C421	87-012-140-089		C-CAP,S 470P-50 CH
C104	87-010-197-089		C-CAP,S 0.01-25 B	C422	87-010-184-089		C-CAP,S 3300P-50 B
C105	87-010-318-089		C-CAP,S 47P-50 CH	C422	87-010-184-089		C-CAP,S 3300P-50 B
C106	87-010-549-049		CAP,E 47-6.3 GAS	C423	87-010-175-089		C-CAP,S 560P-50 SL
C107	87-012-156-089		C-CAP,S 220P-50 CH	C424	87-010-317-089		C-CAP,S 39P-50 CH
C108	87-010-184-089		C-CAP,S 3300P-50 B	C425	87-012-140-089		C-CAP,S 470P-50 CH
C109	87-010-194-089		C-CAP,S 0.047-25 F	C501	87-010-549-049		CAP,E 47-6.3 GAS
C110	87-012-140-089		C-CAP,S 470P-50 CH	C502	87-010-196-089		C-CAP,S 0.1-25 F
C111	87-010-197-089		C-CAP,S 0.01-25 B	C503	87-010-318-089		C-CAP,S 47P-50 CH
C112	87-016-461-089		C-CAP,S 0.47-16 F	C505	87-010-313-089		C-CAP,S 18P-50 CH
C113	87-010-196-089		C-CAP,S 0.1-25 F	C506	87-010-313-089		C-CAP,S 18P-50 CH
C114	87-010-550-049		CAP,E 100-6.3 GAS	C507	87-010-197-089		C-CAP,S 0.01-25 B
C115	87-010-197-089		C-CAP,S 0.01-25 B	C508	87-010-178-089		C-CAP,S 1000P-50 B
C116	87-010-561-049		CAP,E 100-16 GAS	C509	87-010-178-089		C-CAP,S 1000P-50 B
C117	87-010-562-049		CAP,E 220-10 GAS	C510	87-010-178-089		C-CAP,S 1000P-50 B
C118	87-010-553-049		CAP,E 47-16 GAS	C511	87-010-178-089		C-CAP,S 1000P-50 B
C119	87-010-197-089		C-CAP,S 0.01-25 B	C512	87-010-498-049		CAP,E 10-16 GAS
C120	87-010-555-089		CAP,E 100-10 GAS	C513	87-010-498-049		CAP,E 10-16 GAS
C121	87-010-197-089		C-CAP,S 0.01-25 B	C514	87-010-318-089		C-CAP,S 47P-50 CH
C201	87-010-499-049		CAP,E 22-6.3 GAS	C515	87-010-318-089		C-CAP,S 47P-50 CH
C202	87-010-197-089		C-CAP,S 0.01-25 B	C516	87-010-196-089		C-CAP,S 0.1-25 F
C203	87-010-196-089		C-CAP,S 0.1-25 F	C599	87-010-196-089		C-CAP,S 0.1-25 F
C204	87-010-316-089		C-CAP,S 33P-50 CH	C601	87-010-561-049		CAP,E 100-16 5L
				C602	87-010-432-049		CAP,E 10-16 OS

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C603	87-010-196-089		C-CAP,S 0.1-25 F	C136	87-010-197-089		C-CAP,S 0.01-25 B
C604	87-010-196-089		C-CAP,S 0.1-25 F	C137	87-010-805-089		C-CAP,S 1-16F
C605	87-A10-222-049		CAP,E 22-10 OS	C138	87-010-178-089		C-CAP,S 1000P-50 B
C606	87-010-196-089		C-CAP,S 0.1-25 F	C140	87-010-805-089		C-CAP,S 1-16F<EXCEPT V5>
C607	87-012-140-089		C-CAP,S 470P-50 CH	FC4	85-NFT-611-119		FF-CABLE,16P-1.0
C608	87-010-196-089		C-CAP,S 0.1-25 F	M101	87-045-356-019		MOT,RF-310T A 30
J401	87-009-502-019		JACK,PIN 1PY EARTH	M102	87-045-358-019		MOT,RF-310T A 43
L101	87-005-781-089		C-COIL,47UH FLC32C	R140	87-022-364-089		C-RES,S82K-1/10WF
L201	87-005-781-089		C-COIL,47UH FLC32C	R141	87-022-363-089		C-RES,S 68K-1/10W F
L202	87-005-781-089		C-COIL,47UH FLC32C	R142	87-022-363-089		C-RES,S 68K-1/10W F
L301	87-005-781-089		C-COIL,47UH FLC32C	R143	87-022-363-089		C-RES,S 68K-1/10W F
L302	87-005-781-089		C-COIL,47UH FLC32C	R144	87-022-363-089		C-RES,S 68K-1/10W F
L303	87-005-781-089		C-COIL,47UH FLC32C	R145	87-022-364-089		C-RES,S82K-1/10WF
L401	87-005-196-089		COIL,10UH	SFR101	87-024-175-089		SFR,47K DIA6 V
L402	87-005-781-089		C-COIL,47UH FLC32C	SFR102	87-024-176-089		SFR,100K DIA6 V
L404	87-005-190-089		COIL,3.3UH	SFR103	87-024-175-089		SFR,47K DIA6 V
L405	87-005-189-089		COIL,2.7UH	SW101	87-036-340-019		SW,LEAF LSA-1121
L501	87-005-781-089		C-COIL,47UH FLC32C				
L601	87-005-469-089		COIL,4.7UH				
L602	87-A50-095-019		COIL,68UH	T-T C.B			
M201	87-045-305-019		MOTOR, RF-500TB	C401	87-018-214-089		CAP TC U 0.1-50 F
S101	87-036-109-019		SW,PUSH SPPB 61	FC401	84-ZG1-614-119		CABLE FFC 5P-1.25
S102	87-036-109-019		SW,PUSH SPPB 61	M401	87-045-364-019		MOTOR, (BCH3B14)
S201	87-A90-162-019		SW,SL 1-1-3 SSSU	PS401	87-026-573-019		P-SNSR,GP1S53V
X201	87-A70-027-089		VIB,XTAL 8MHZ 100PPM				
X401	87-A70-026-089		VIB,XTAL 13.5MHZ 50PPM	LED C.B<F>			
X501	87-030-270-089		VIB,XTAL 16.9344MHZ	LED101	87-070-200-089		LED,SLP636C-81-S-T1<F>
				LED102	87-017-350-080		LED,SEL1550CM<F>
CD MECHA C.B<V3L,V4L,V5>				LED103	87-017-350-080		LED,SEL1550CM<F>
				LED104	87-070-200-089		LED,SLP636C-81-S-T1<F>
C101	87-010-154-089		C-CAP,S 10P-50 CH<EXCEPT V5>	VCD C.B<V3L>			
C101	87-010-334-080		C-CAP,S 12P-50 CH<V5>	C2	87-010-378-010		CAP,E 10-16
C102	87-010-193-089		C-CAP,S 0.033-25 F<V5>	C3	87-010-378-010		CAP,E 10-16
C102	87-010-184-089		C-CAP,S 3300P-50 B<EXCEPT V5>	C4	87-010-374-010		CAP,E 47-10
C103	87-010-197-089		C-CAP,S 0.01-25 B<EXCEPT V5>	C5	87-010-374-010		CAP,E 47-10
				C9	87-010-378-010		CAP,E 10-16
C103	87-010-993-089		C-CAP,S 0.056-25<V5>	C10	87-010-378-010		CAP,E 10-16
C104	87-010-193-089		C-CAP,S 0.033-25 F<EXCEPT V5>	C11	87-010-378-010		CAP,E 10-16
C104	87-010-993-089		C-CAP,S 0.056-25<V5>	C12	87-010-374-010		CAP,E 47-10
C105	87-010-197-089		C-CAP,S 0.01-25 B	C13	87-010-378-010		CAP,E 10-16
C107	87-010-197-089		C-CAP,S 0.01-25 B<V5>	C17	87-010-248-010		CAP,E 220-10
C107	87-010-182-089		C-CAP,S 2200P-50 B<EXCEPT V5>	C22	87-010-374-010		CAP,E 47-10
C108	87-010-805-089		C-CAP,S 1-16F	C23	87-010-374-010		CAP,E 47-10
C109	87-010-322-089		C-CAP,S 100P-50 CH	C32	87-010-378-010		CAP,E 10-16
C110	87-010-198-089		C-CAP,S 0.022-25 B<EXCEPT V5>	C47	87-010-248-010		CAP,E 220-10
C110	87-010-993-089		C-CAP,S 0.056-25<V5>	C49	87-010-378-010		CAP,E 10-16
C111	87-010-551-089		CAP ELECT 33-10V SRE<EXCEPT V5>	C52	87-010-248-010		CAP,E 220-10
C111	87-010-499-049		CAP,E 22-6.3 GAS<V5>	C101	87-010-378-010		CAP,E 10-16
C112	87-010-322-089		C-CAP,S 100P-50 CH	L1	SL-AL0-4NA-100		COIL,10UH
C113	87-010-196-089		C-CAP,S 0.1-25 F	L2	SL-AL0-4NA-472		COIL,4.7UH
C114	87-010-197-089		C-CAP,S 0.01-25 B	X1	SS-KY4-05M-000		X'TAL,40.5MHZ
C115	87-010-196-089		C-CAP,S 0.1-25 F<EXCEPT V5>	X2	SS-KY4-M00-000		X'TAL,4MHZ
C115	87-012-141-089		C-CAP,S 0.22-16 F<V5>	X3	SS-KY4-433-616		X'TAL,4.433616MHZ
C116	87-010-182-089		C-CAP,S 2200P-50 B				
C117	87-010-196-089		C-CAP,S 0.1-25 F<EXCEPT V5>	VCD C.B<V4L>			
C117	87-012-141-089		C-CAP,S 0.22-16 F<V5>	C13	87-010-367-080		CAP,E 4.7-25V(5ECEC1)
C118	87-010-196-089		C-CAP,S 0.1-25 F	C38	87-010-075-040		CAP,E 10-16V(5ECEC1)
C119	87-010-193-089		C-CAP,S 0.033-25 F<V5>	C40	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C119	87-010-196-089		C-CAP,S 0.1-25 F<EXCEPT V5>	C44	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C120	87-010-549-089		CAP ELECT 47-6.3V	C47	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C121	87-010-549-089		CAP ELECT 47-6.3V				
C122	87-010-495-089		CAP,E 2.2-35 5L<V5>	C48	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C122	87-010-497-089		CAP,E 4.7-35 5L<EXCEPT V5>	C51	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C123	87-010-549-089		CAP ELECT 47-6.3V	C54	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C125	87-010-553-089		CAP,E 47-16	C56	87-010-076-810		CAP,E 22-6.3V(5ECEC0)
C127	87-010-553-089		CAP,E 47-16	C58	87-010-076-810		CAP,E 22-6.3V(5ECEC0)
C127	87-010-549-089		CAP,E 47-6.3 GAS				
C128	87-010-549-089		CAP ELECT 47-6.3V	C81	87-016-155-010		CAP,E 1000-6.3V5ECER0)
C129	87-010-182-089		C-CAP,S 2200P-50 B	C128	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C131	87-010-196-089		C-CAP,S 0.1-25 F	C133	87-010-053-810		CAP,E 1-50V(5ECEC1)
C133	87-010-196-089		C-CAP,S 0.1-25 F	C150	87-010-075-040		CAP,E 10-16V(5ECEC1)
C134	87-010-196-089		C-CAP,S 0.1-25 F				
C135	87-010-196-089		C-CAP,S 0.1-25 F				

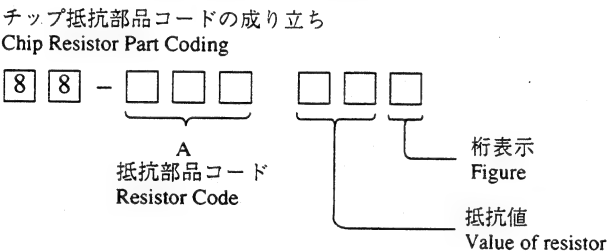
REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C151	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
C152	87-016-155-010		CAP,E 1000-6.3V5ECER0)
C157	87-010-075-040		CAP,E 10-16V(5ECEC1)
CT1	S2-130-007-010		CAP,TRIMMER 30PF(5ECT04)
L1	S7-001-XXX-100		C-COIL, 47UH(5ELQE4)
X1	S0-120-003-010		X'TAL, 12.0000MHZ(5EXMA4)
X2	S0-177-343-010		X'TAL, 17.73447MHZ(5EXMA4)

SUB C.B<V3L>


DRIVE C.B<WR>

M1	87-045-358-019	MOT,RF-310TA 43
M2	87-045-356-019	MOT,RF-310TA 30
SW1	87-A90-042-019	SW,LEAF MSW 17310 MVPO

○ チップ抵抗部品コード／CHIP RESISTOR PART CODE

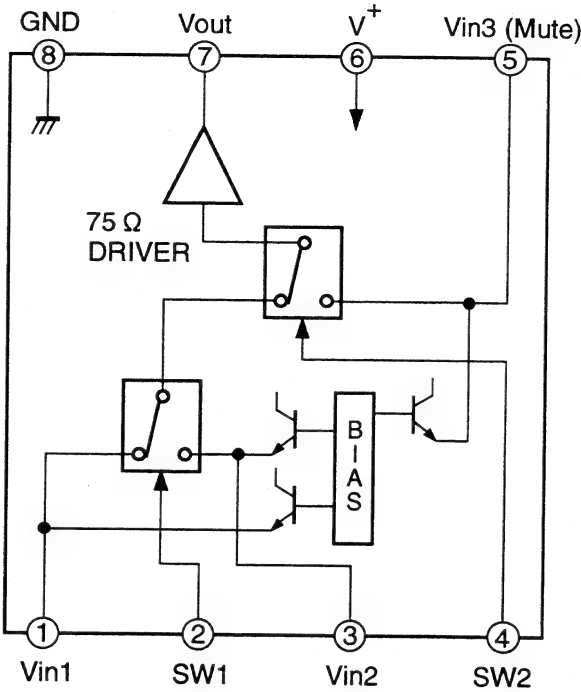


チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

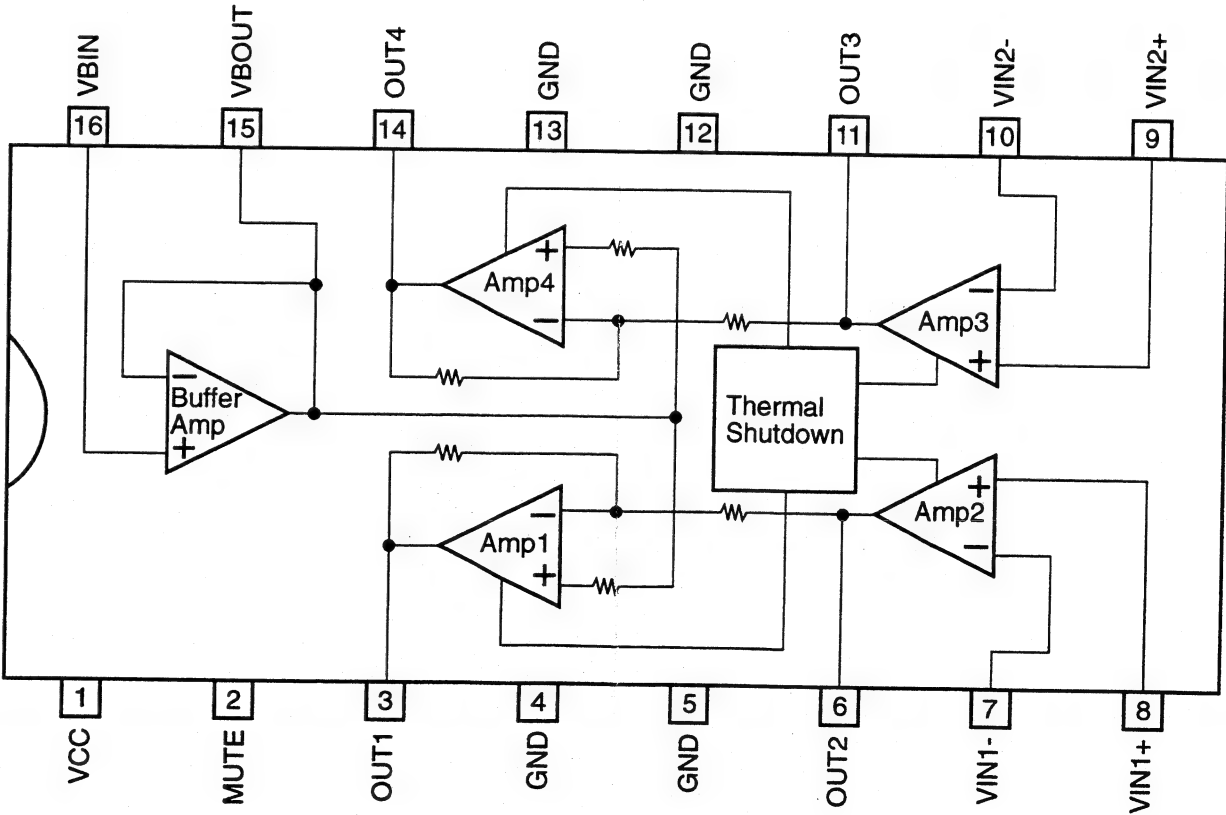
IC BLOCK DIAGRAM

IC, NJM2244L



SW1	SW2	OUTPUT SIGNAL
L	L	Vin1
H	L	Vin2
L/H	H	Vin3

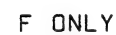
IC, LA6530

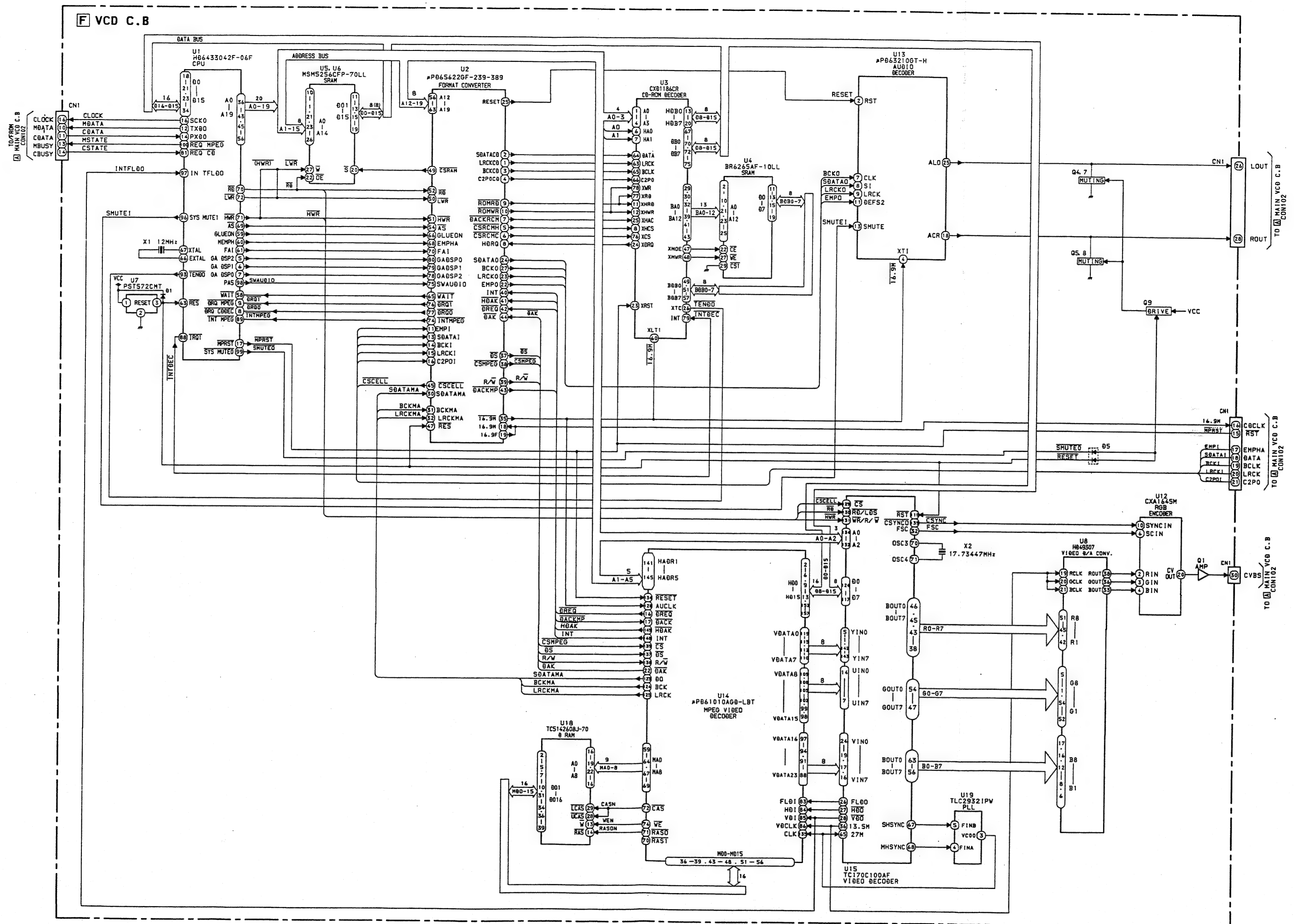




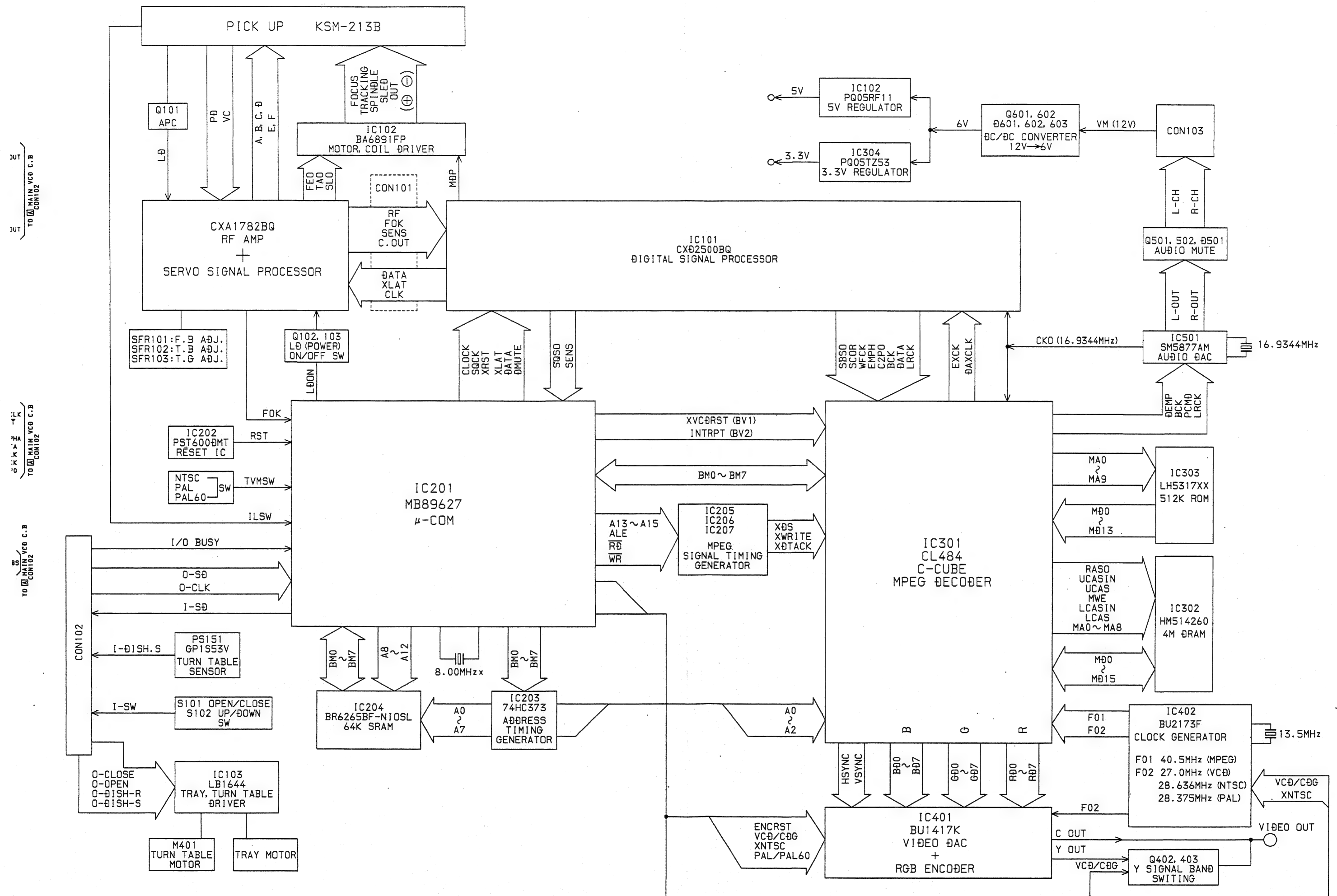




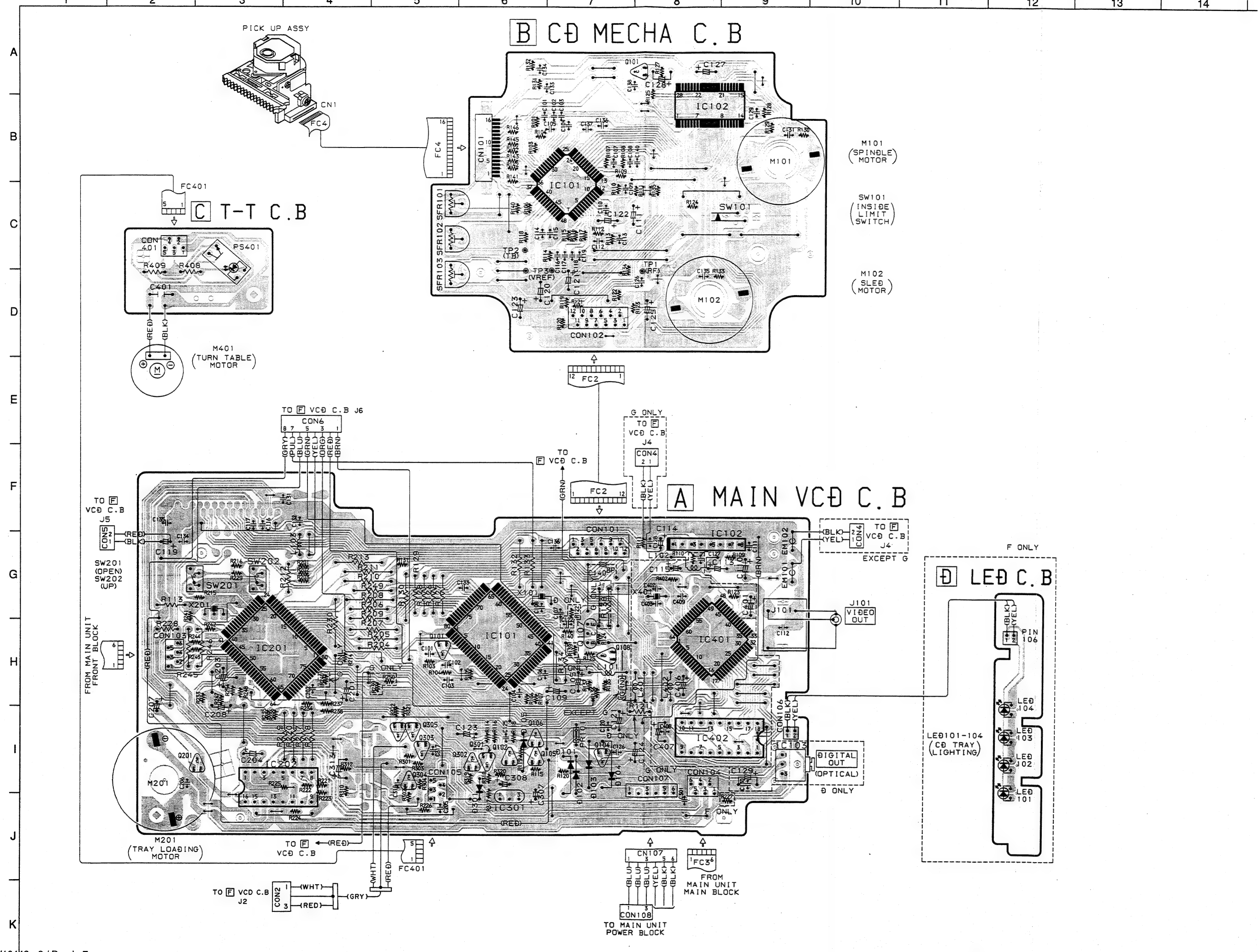




BLOCK DIAGRAM-5 (V5)

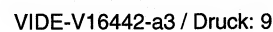








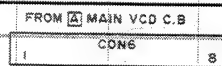
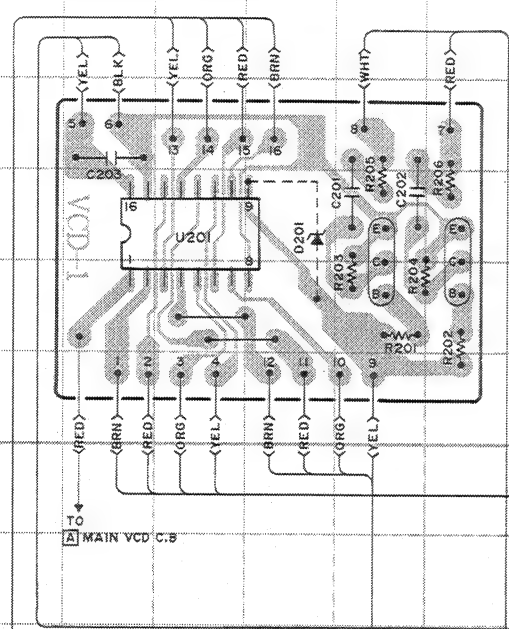
26





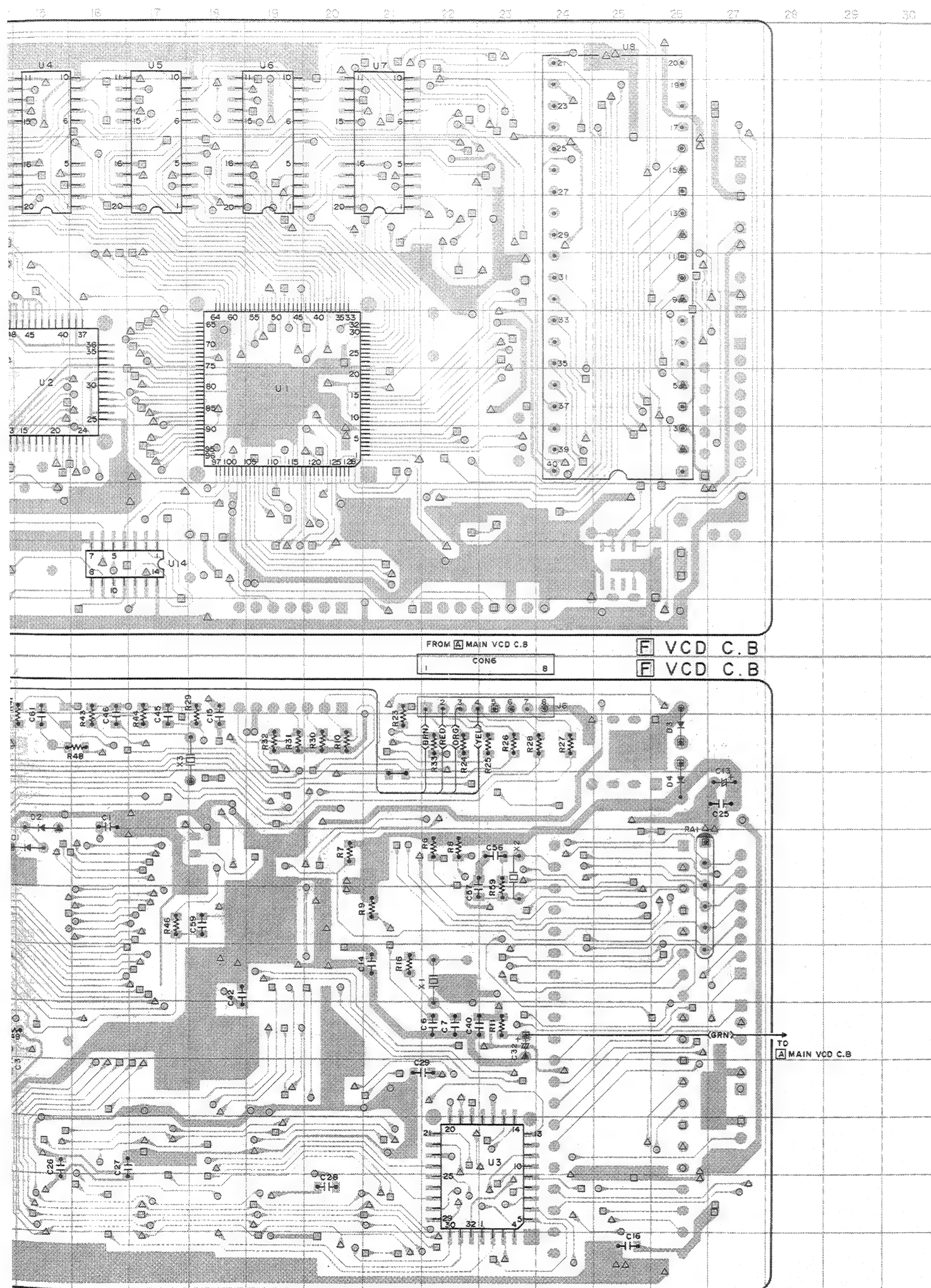




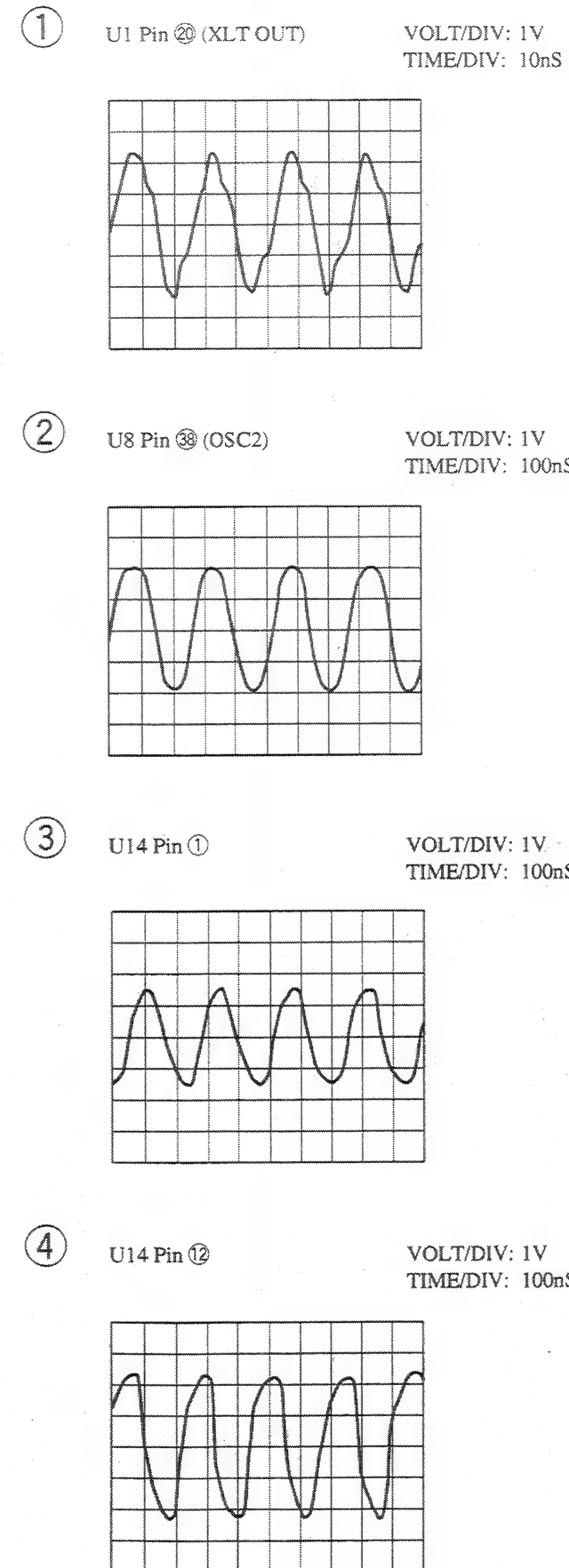


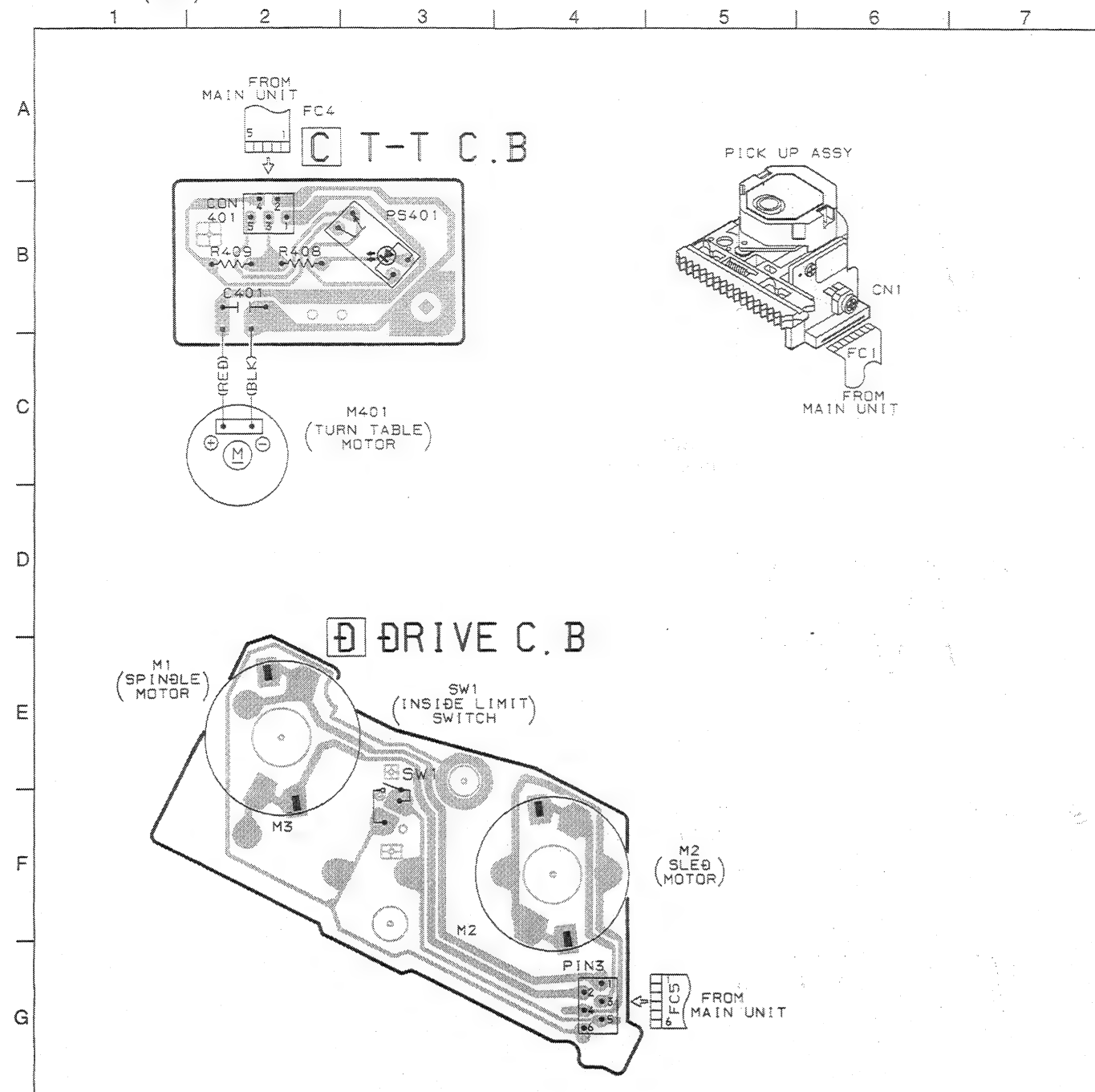
F	VCD	C.B
F	VCD	C.B



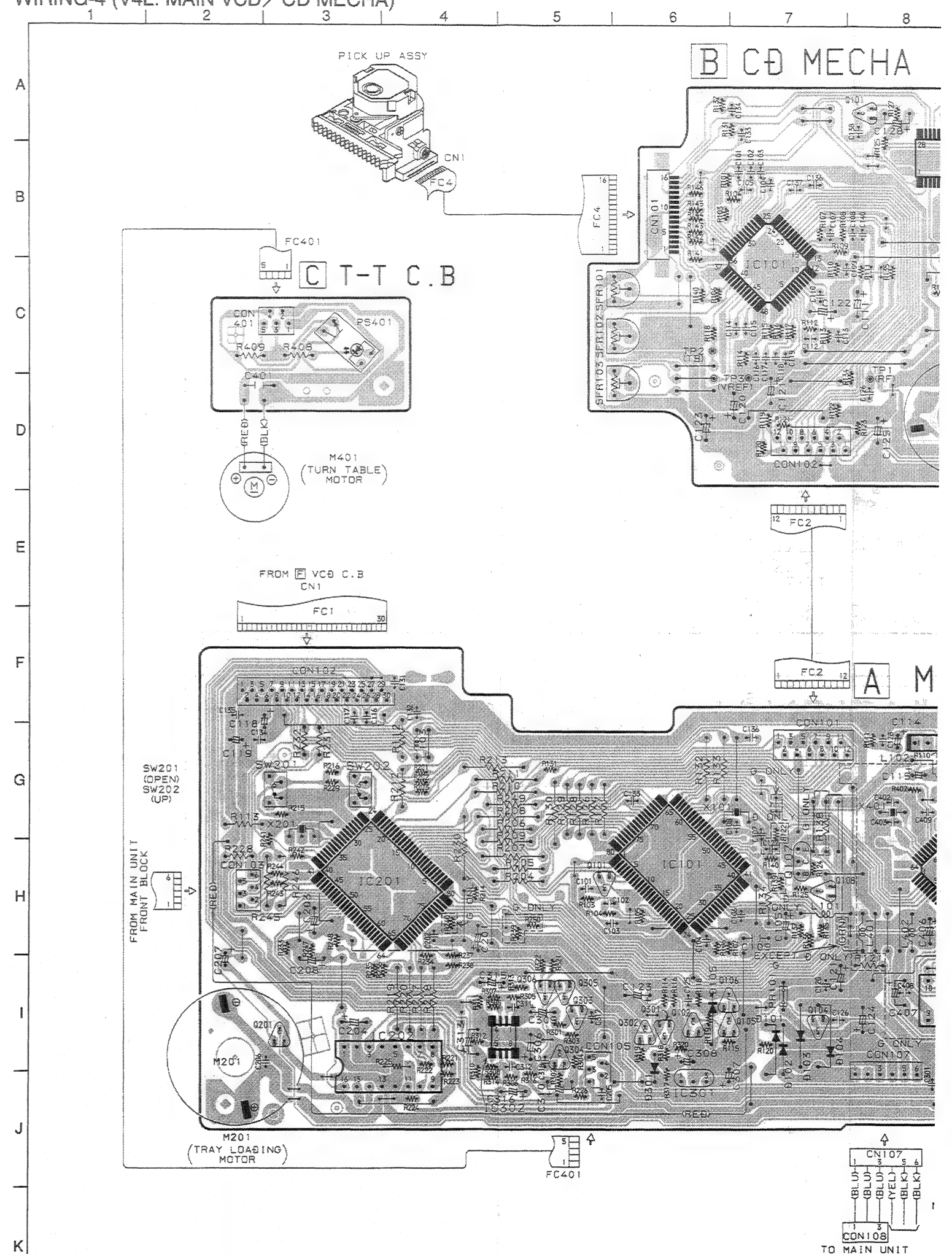
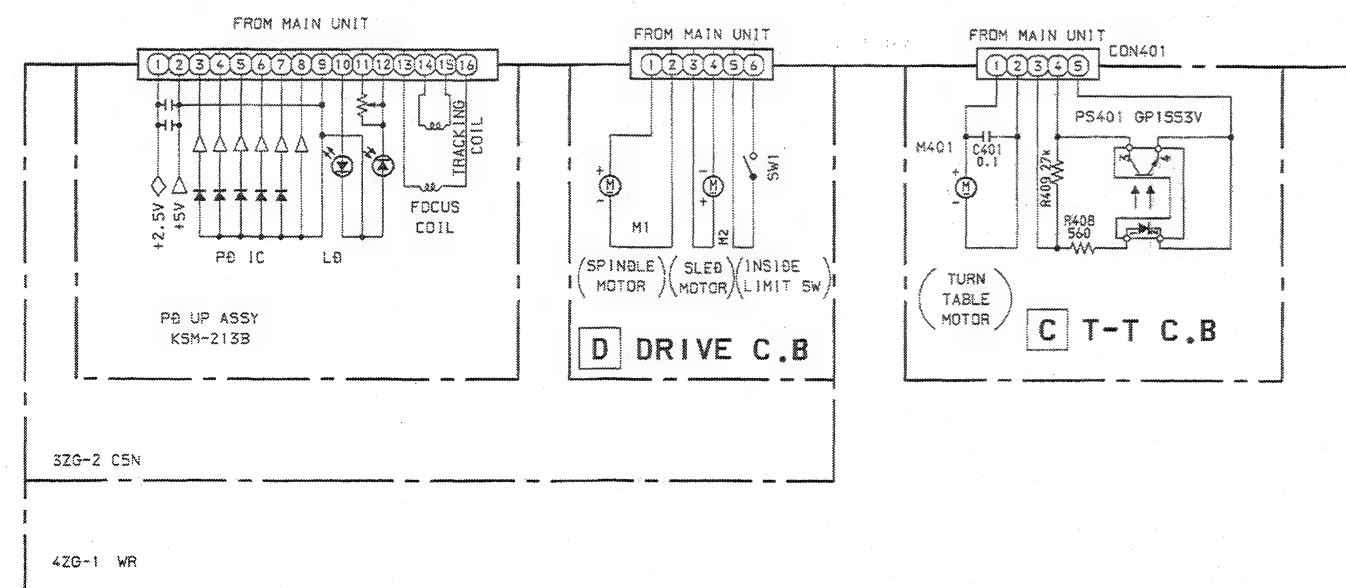


## WAVE FORM

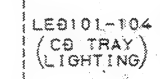
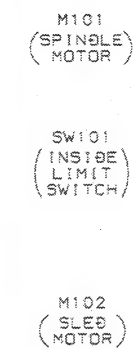




SCHEMATIC DIAGRAM-4 (WR)

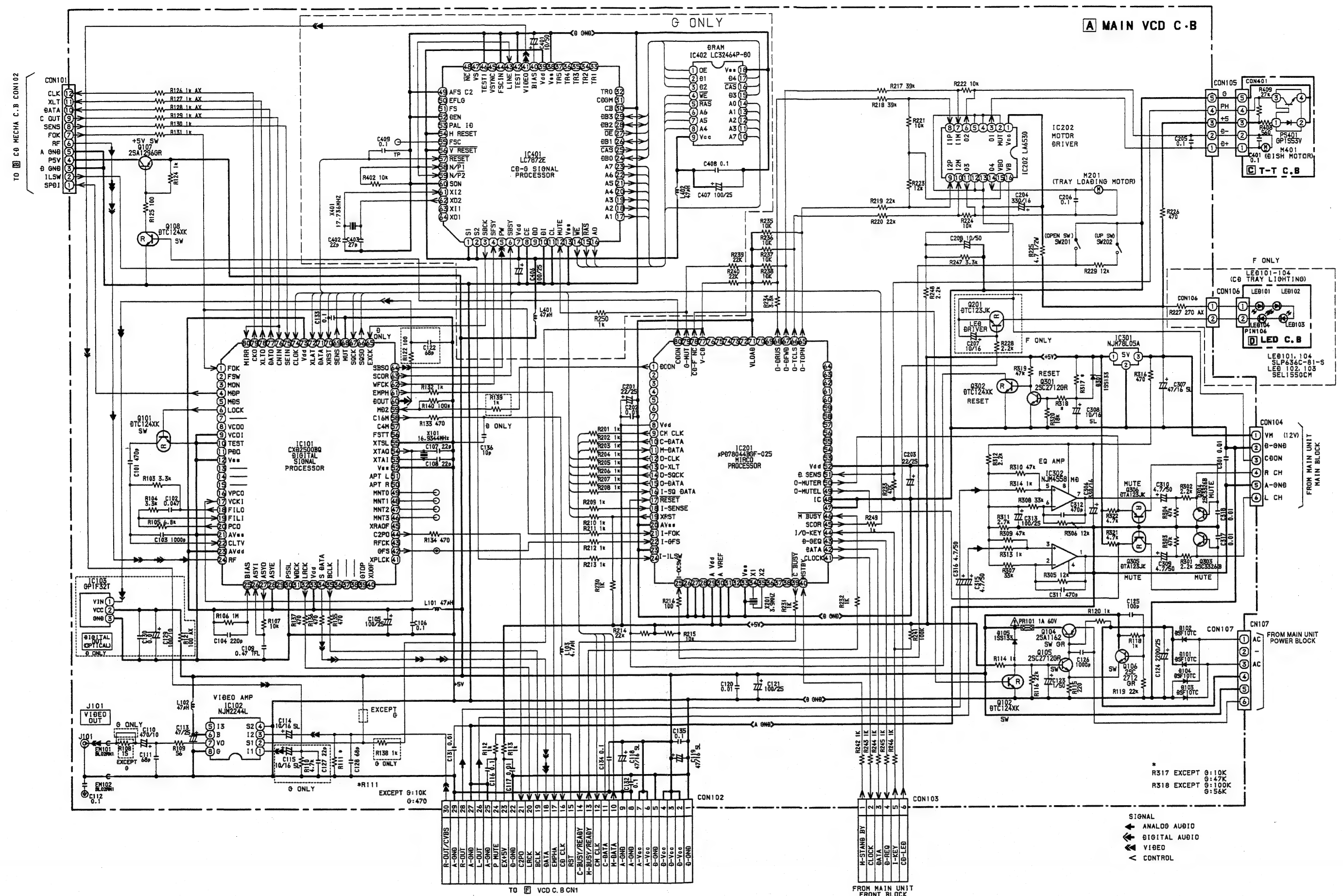




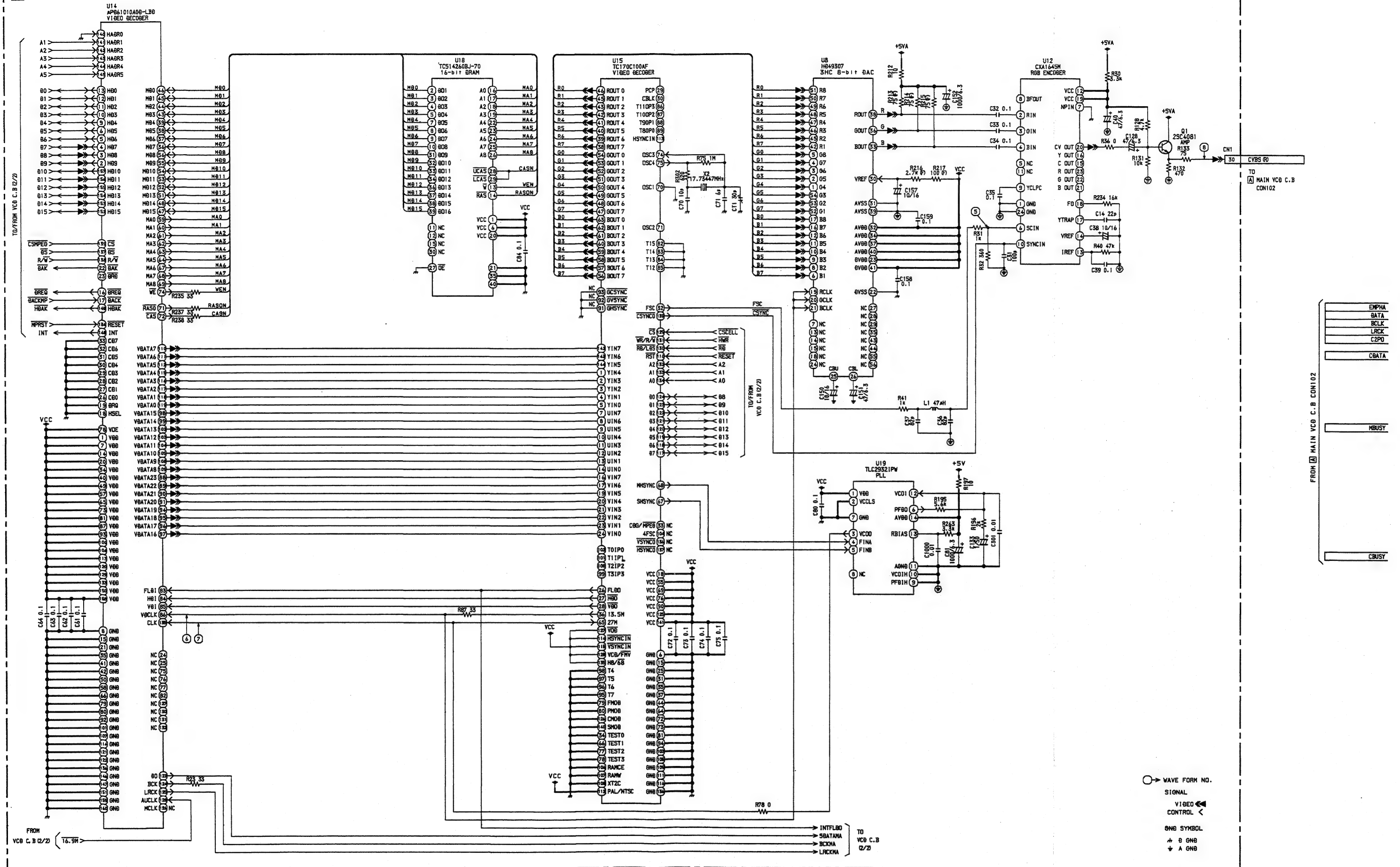


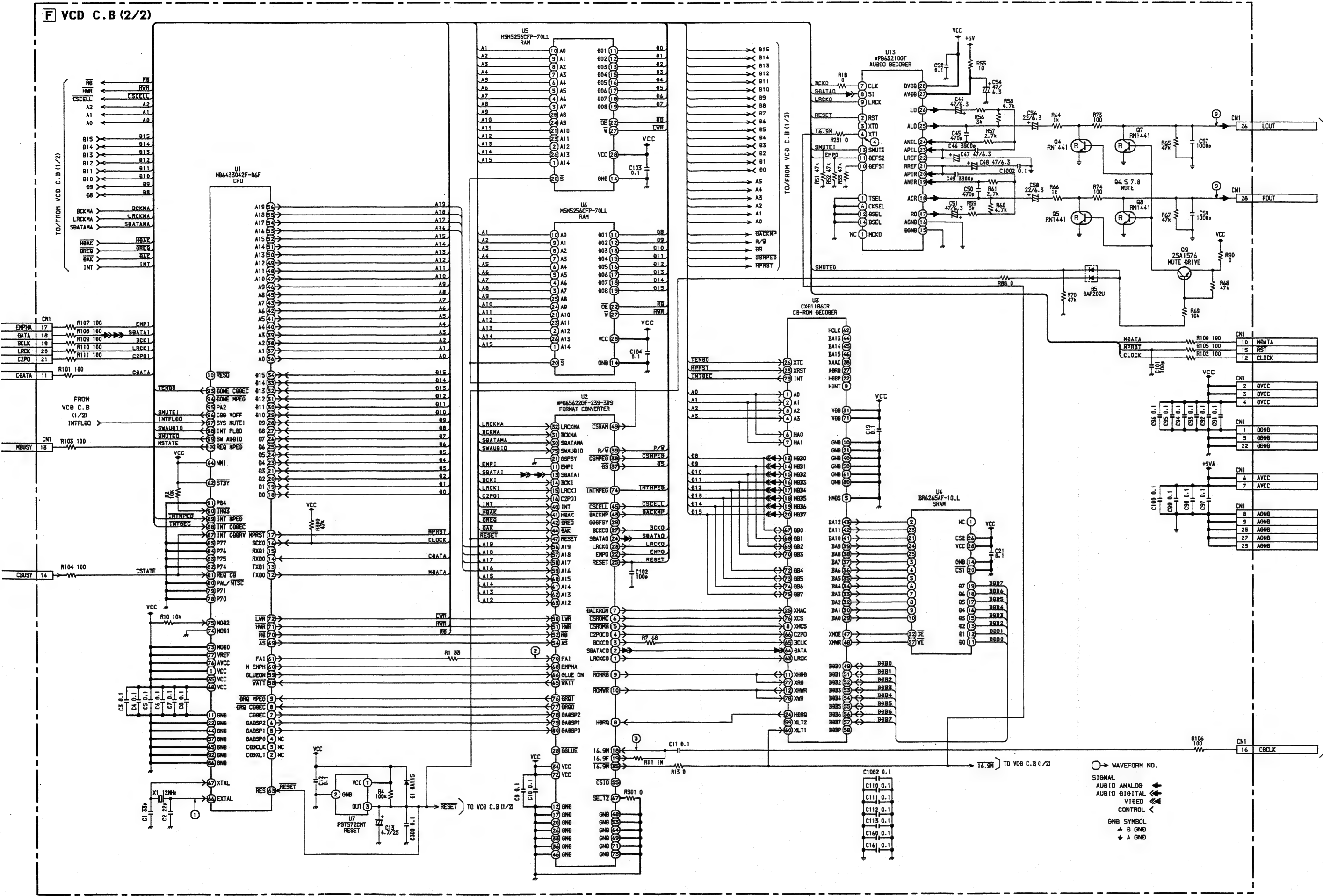






## F VCD C.B (1/2)





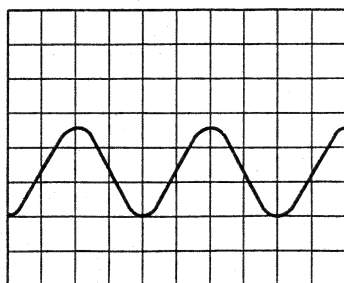


# WAVE FORM

①

U1 Pin 66 (EXTAL)

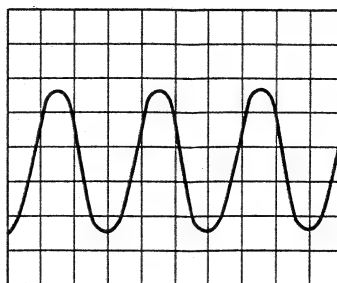
VOLT/DIV: 1V  
TIME/DIV: 20ns



③

U2 Pin 18 (16.9M)

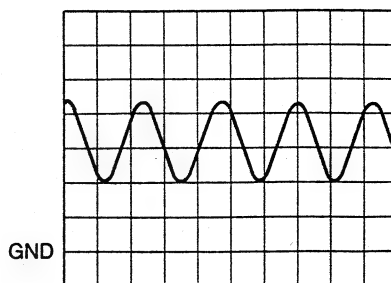
VOLT/DIV: 1V  
TIME/DIV: 20ns



⑤

U12 Pin 6 (SC IN)

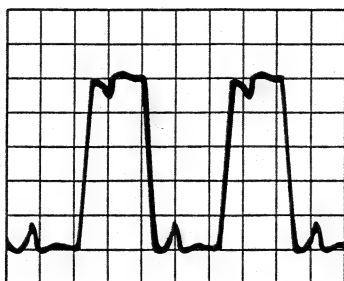
VOLT/DIV: 1V  
TIME/DIV: 20ns



②

U2 Pin 70 (FAI)

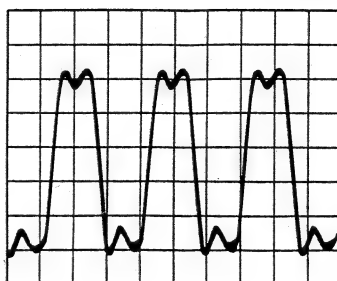
VOLT/DIV: 1V  
TIME/DIV: 20ns



④

U13 Pin 4 (XTI)

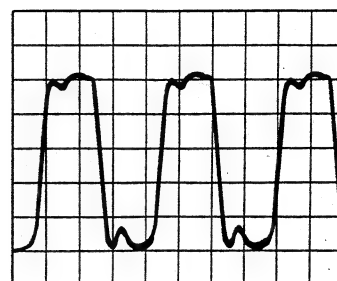
VOLT/DIV: 1V  
TIME/DIV: 20ns



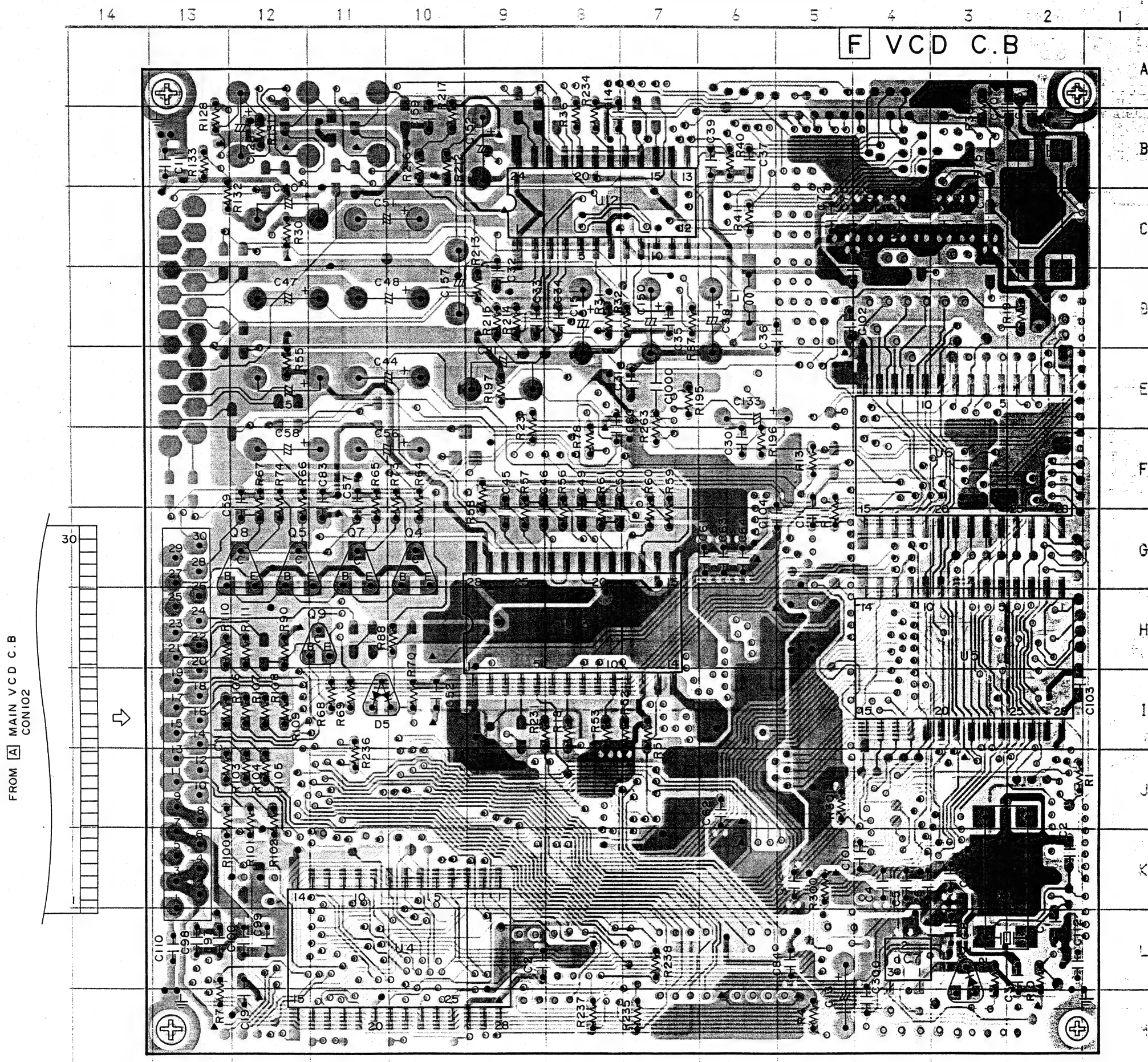
⑥

U14 Pin 66 (VD CLK)

VOLT/DIV: 1V  
TIME/DIV: 20ns



## WIRING-5 (V4L: VCD)

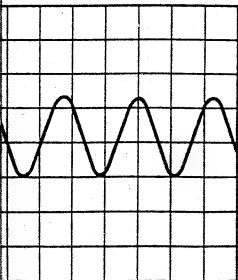


## Through-Hole Note

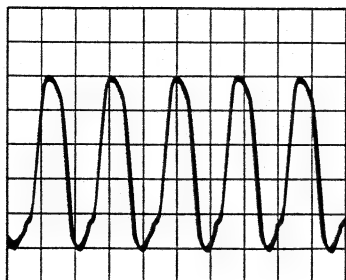
SIGNAL	VCC	+5V	A GND	D GND
○	▲	▲	●	●



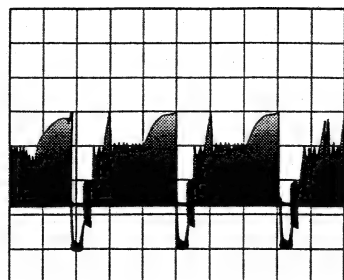
⑥ (SC IN) VOLT/DIV: 1.0V  
TIME/DIV: 0.1μS



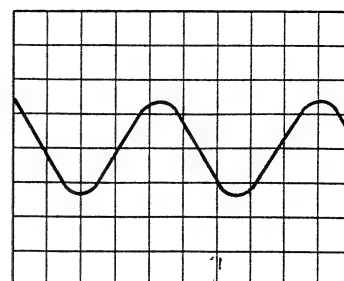
⑦ U14 Pin ⑬ (CLK) VOLT/DIV: 1V  
TIME/DIV: 20nS



KARAOKE VOLT/DIV: 200mV  
TIME/DIV: 20μS



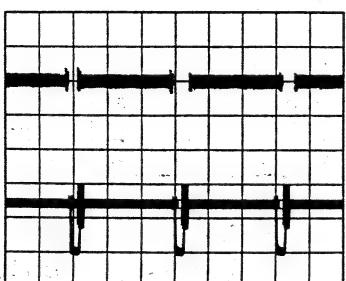
⑨ CN1 Pin ②⑨ (L OUT) VOLT/DIV: 1.0V  
CN1 Pin ②⑧ (R OUT) TIME/DIV: 0.2mS  
1kHz OUTPUT



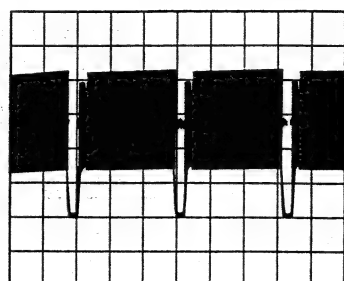
⑧ (VD CLK) VOLT/DIV: 1V  
TIME/DIV: 20nS



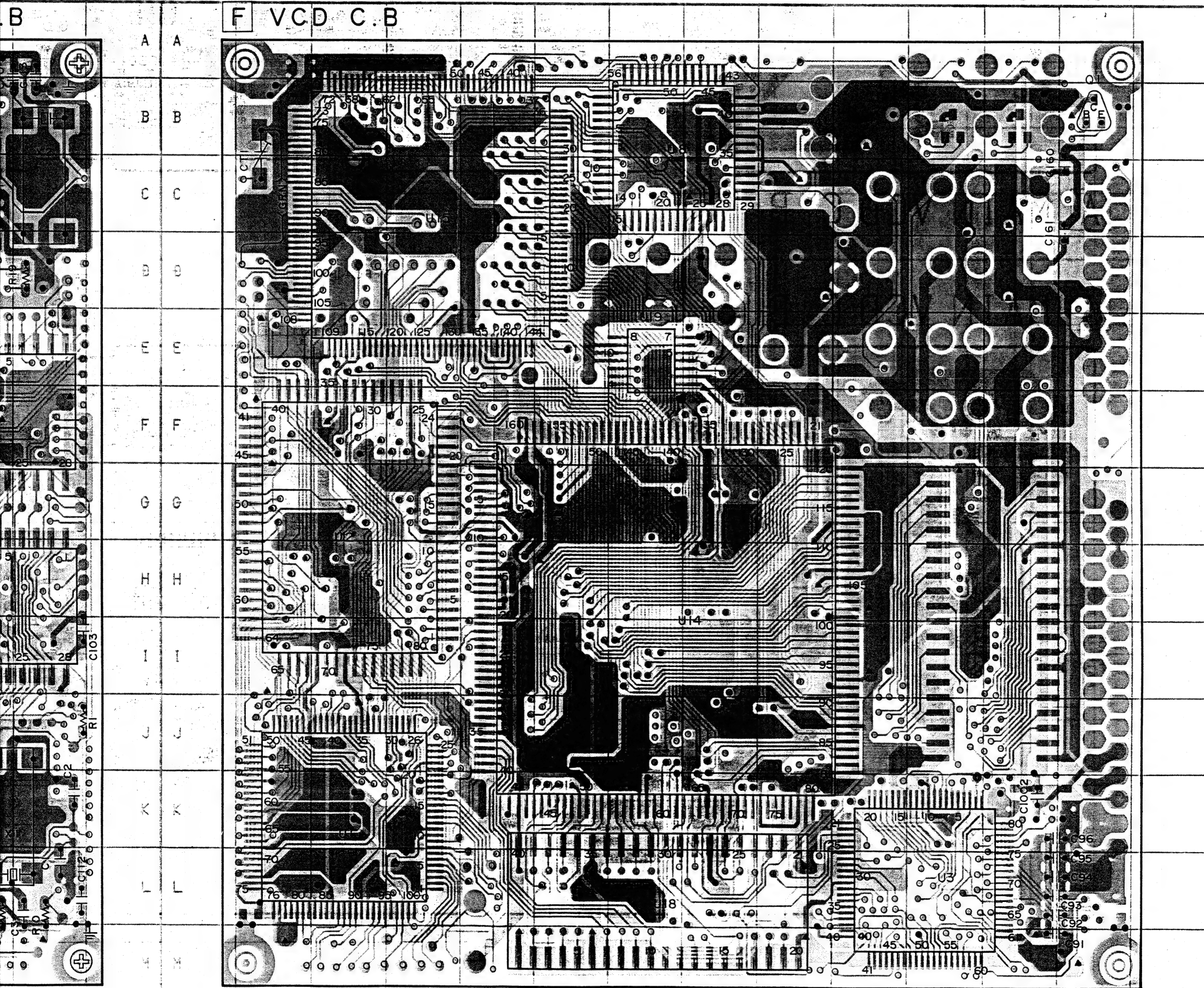
⑧ CN1 Pin ③① (CVBS R) VOLT/DIV: 200mV  
WHITE TIME/DIV: 20μS



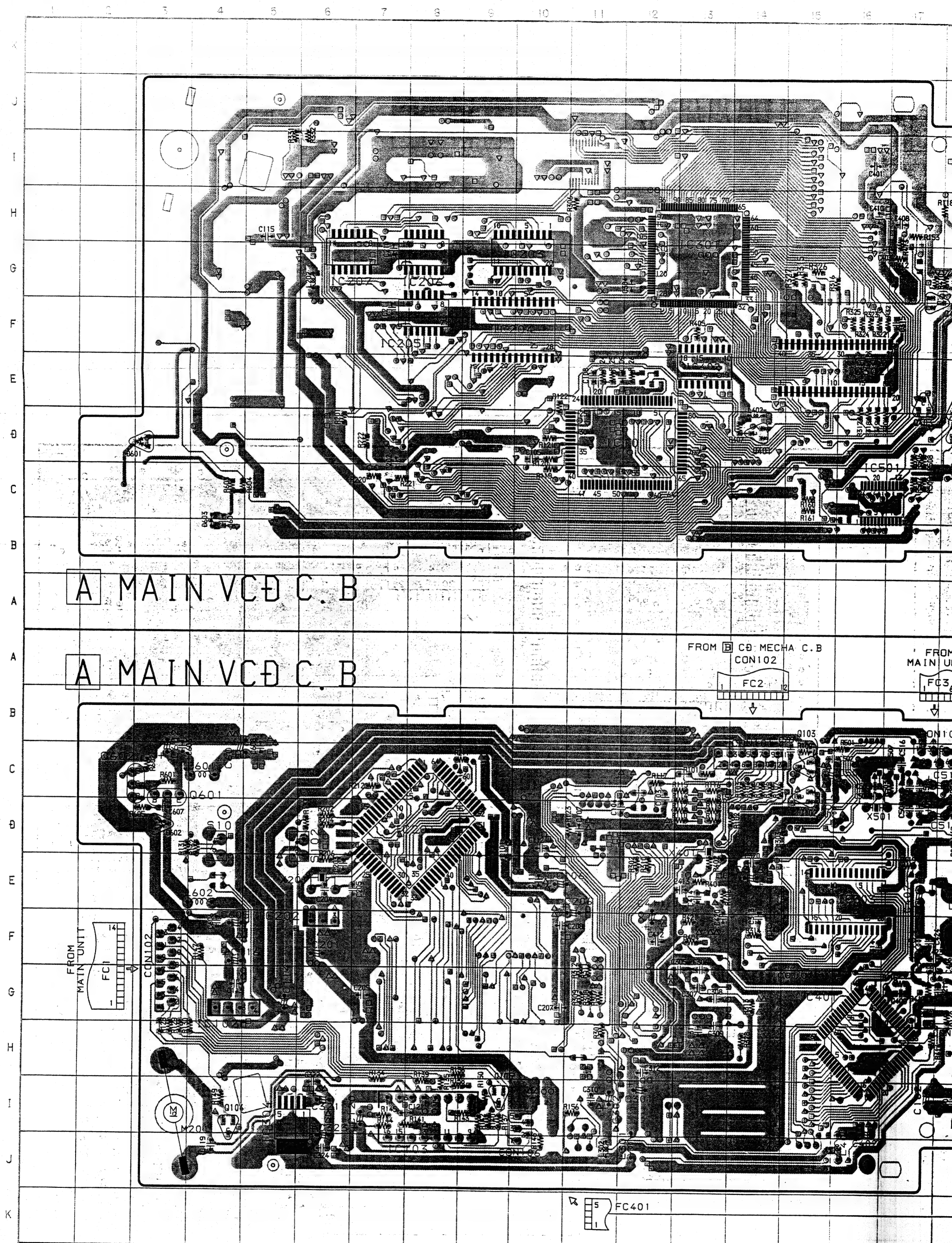
BLUE VOLT/DIV: 100mV  
TIME/DIV: 20μS



2 1 1 2 3 4 5 6 7 8 9 10 11 12 13 14



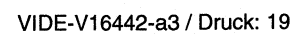


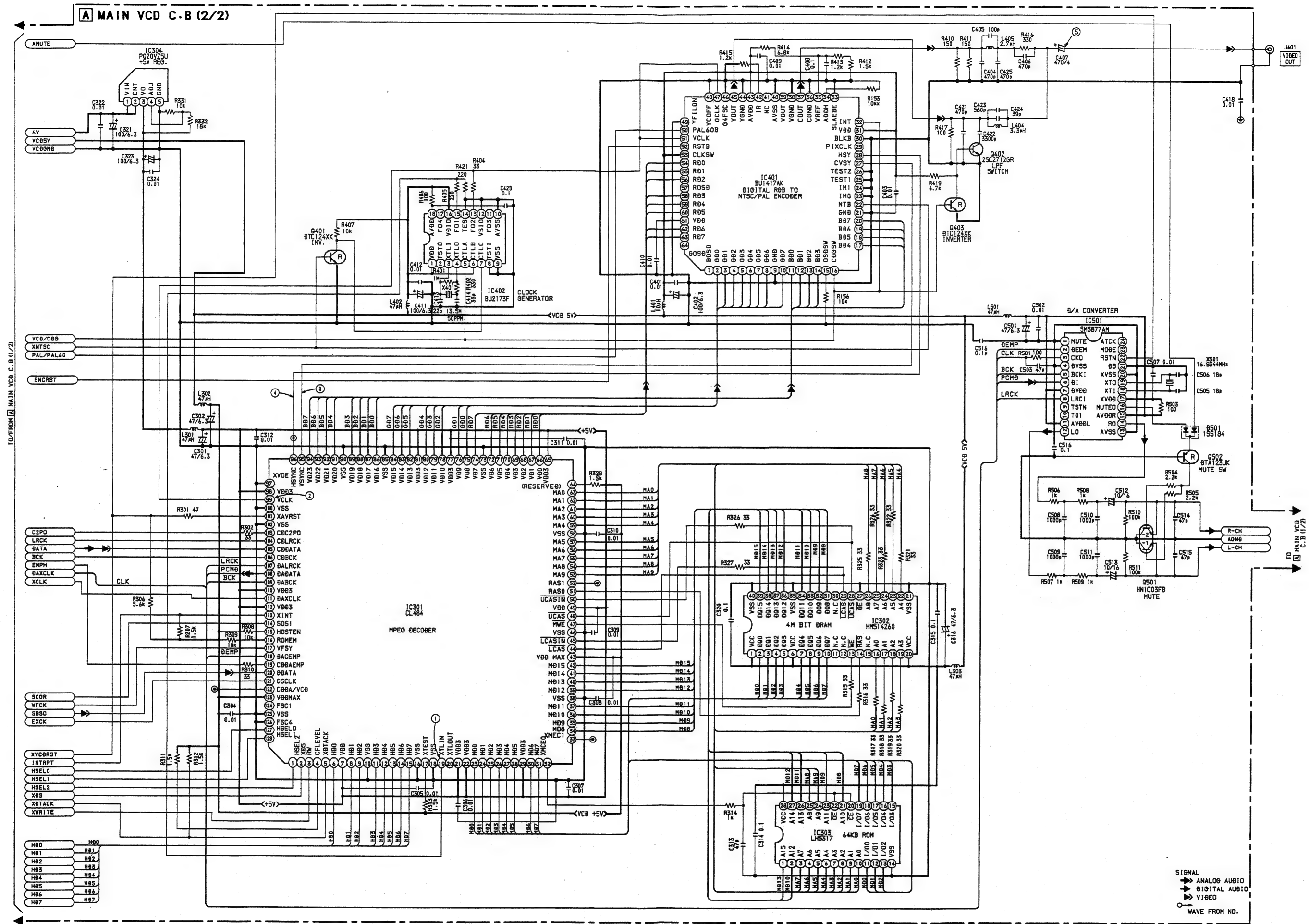






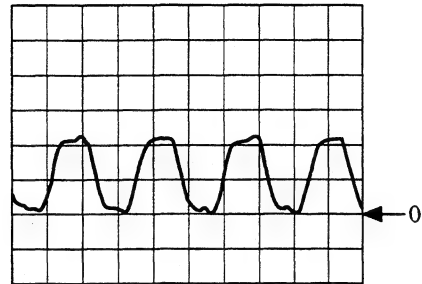
50



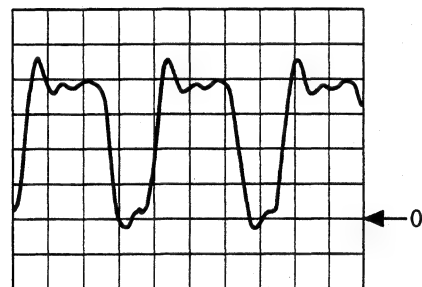


## WAVE FORM

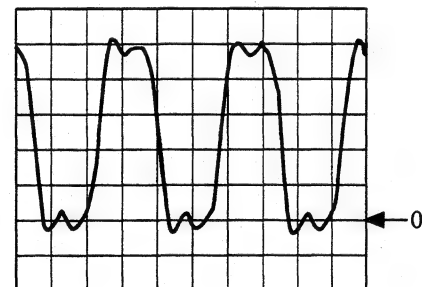
- ① IC301 Pin ①⑨ (GCK)  
40.5MHz  
VCD PLAY  
TV MODE: • NTSC  
• PAL  
• PAL AUTO



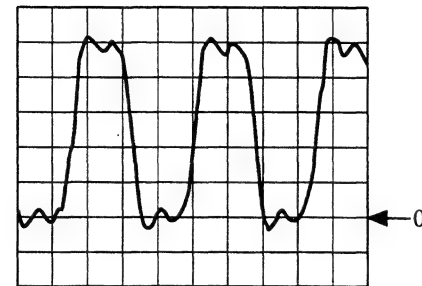
- ② IC301 Pin ②⑨ (VCLK)  
27MHz±1350Hz  
VCD PLAY  
TV MODE: • NTSC  
• PAL  
• PAL AUTO



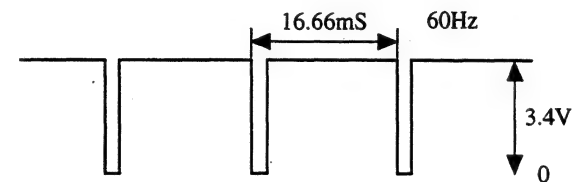
- 28.375MHz  
CDG PLAY  
TV MODE: • PAL  
• PAL AUTO



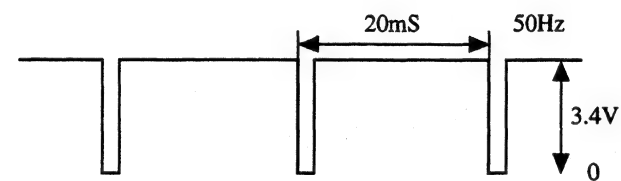
- 28.6363MHz  
CDG PLAY  
TV MODE: • NTSC



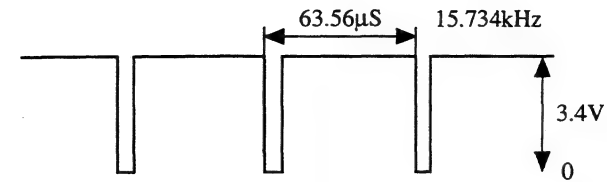
- ③ IC301 Pin ③⑤ (V SYNC)  
VCD, CDG PLAY  
TV MODE: • NTSC  
• PAL AUTO



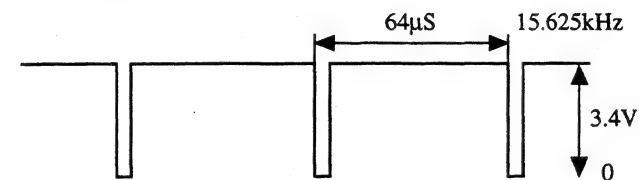
VCD, CDG PLAY  
TV MODE: PAL



- ④ IC301 Pin ④⑤ (H SYNC)  
VCD, CDG PLAY  
TV MODE: • NTSC  
• PAL AUTO

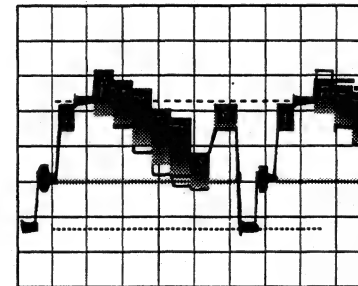


VCD, CDG PLAY  
TV MODE: PAL



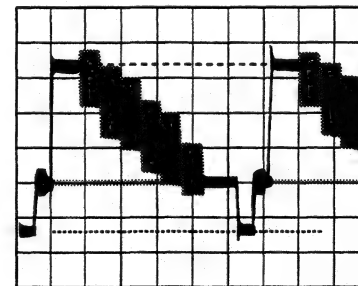
- ⑤ VIDEO OUT  
C407 ⊖ side  
CDG PLAY: CD-T03 TRACK2  
TV MODE: • NTSC

VOLT/DIV: 200mV  
TIME/DIV: 10μs



- VCD PLAY: CD-T05 TRACK4  
TV MODE: • NTSC

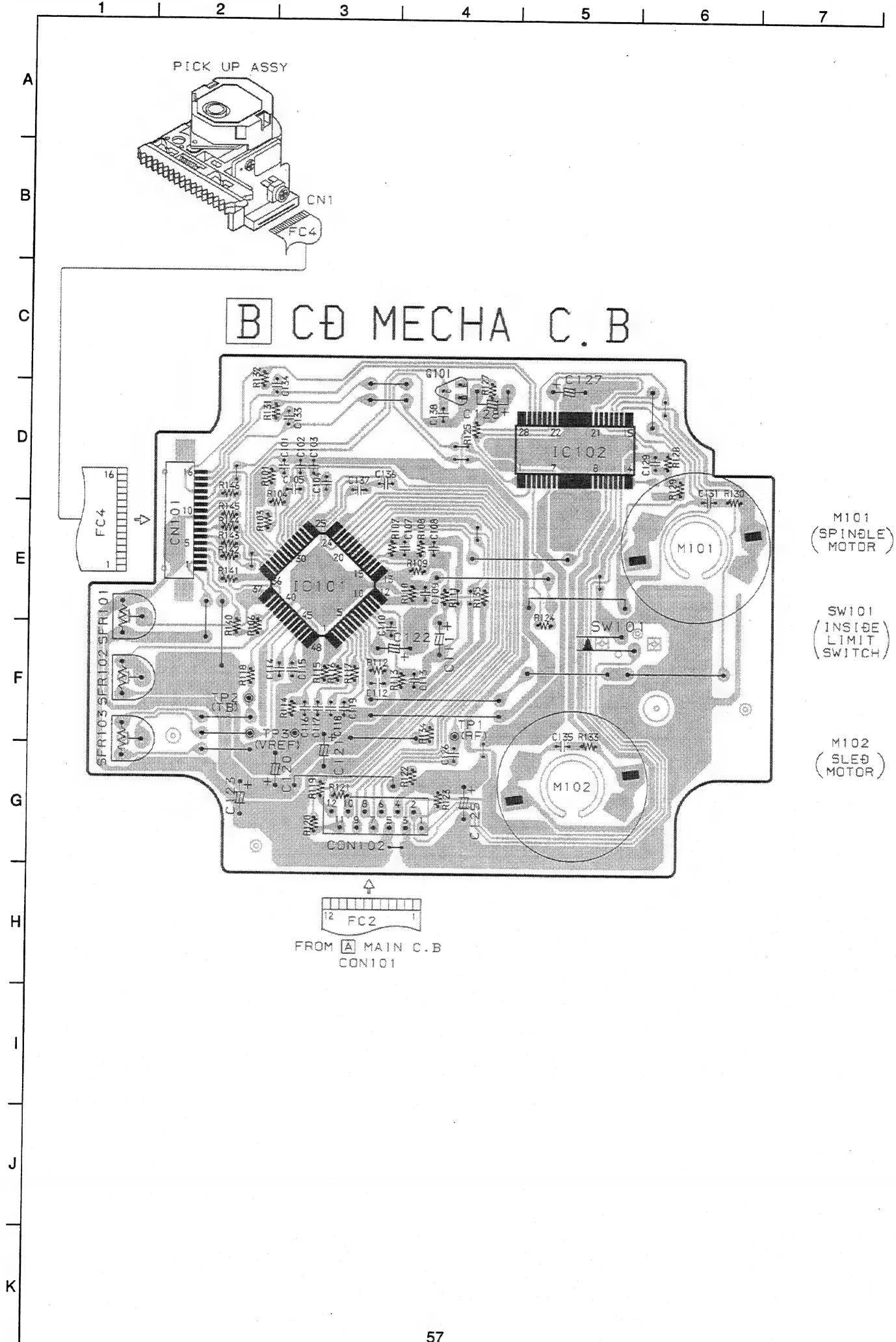
VOLT/DIV: 200mV  
TIME/DIV: 10μs







# WIRING-7 (V5: CD MECHA)



# IC DESCRIPTION

## IC, CXD2500BQ

Pin No.	Pin Name	I/O	Description
1	FOK	I	Focus OK input terminal. Used for SENS output and servo auto sequencer.
2	FSW	O	Spindle motor output filter selection output.
3	MON	O	Spindle motor ON-OFF control output.
4	MDP	O	Spindle motor servo control.
5	MDS	O	Spindle motor servo control.
6	LOCK	O	H output when GFS is sampled at 460 Hz and GFS is H. L output when L is continuously 8 times.
7	NC	—	Not used.
8	VCOO	O	Oscillator circuit output for analog EFM PLL.
9	VCOI	I	Oscillator circuit input for analog EFM PLL. fLOCK = 8.6436 MHz.
10	TEST	I	TEST terminal. Normally GND.
11	PDO	O	Charge pump output for analog EFM PLL.
12	VSS	—	GND.
13	NC	—	Not used.
14	NC	—	Not used.
15	NC	—	Not used.
16	VPCO	O	Charge pump output for vari-pitch PLL.
17	VCKI	I	Clock input from external VCO for vari-pitch. fc center = 16.9344 MHz.
18	FILO	O	Filter output for master PLL (slave = digital PLL).
19	FILI	I	Filter input for master PLL.
20	PCO	O	Charge pump output for
21	AVSS	—	Analog GND.
22	CLTV	I	VCO control voltage input for master.
23	AVDD	—	Analog power supply. (+3.5 V)
24	RF	I	EFM signal input.
25	BIAS	I	Asymmetry circuit constant current input.
26	ASYI	I	Asymmetry compare voltage input.
27	ASYO	O	EFM full swing output (L = Vss, H = VDD.)
28	ASYE	I	L: asymmetry circuit OFF, H: asymmetry circuit ON.
29	NC	—	Not used.
30	PSSL	I	Audio data output mode selection input. Serial output at L, parallel output at H.
31	WDCK	O	D/A interface for 48-bit slot. Word clock f = 2 Fs.
32	LRCK	O	D/A interface for 48-bit slot. LR clock f = Fs.
33	VDD		Power supply. (+3.5 V)
34	S DATA	O	DA16 (MSB) output when PSSL = H. 48-bit slot serial data when PSSL = L. (2's COMP, MSB first).
35	BCLK	O	DA15 output when PSSL = H. 48-bit slot bit clock when PSSL = L.
36	NC	O	DA14 output when PSSL = H. 64-bit slot serial data when PSSL = L. (2's COMP, MSB first).
37	NC	O	DA13 output when PSSL = H. 64-bit slot bit clock when PSSL = L.
38	NC	O	DA12 output when PSSL = H. 64-bit slot LR clock when PSSL = L.

Pin No.	Pin Name	I/O	Description
39	GTOP	O	DA11 output when PSSL = H. GTOP output when PSSL = L.
40	XUGF	O	DA10 output when PSSL = H. XUGF output when PSSL = L.
41	XPLCK	O	DA09 output when PSSL = H. XPLCK output when PSSL = L.
42	GFS	O	DA08 output when PSSL = H. GFS output when PSSL = L.
43	RFCK	O	DA07 output when PSSL = H. RFCK output when PSSL = L.
44	C2PO	O	DA06 output when PSSL = H. C2PO output when PSSL = L.
45	XRAOF	O	DA05 output when PSSL = H. XRAOF output when PSSL = L.
46	MNT3	O	DA04 output when PSSL = H. MNT3 output when PSSL = L.
47	MNT2	O	DA03 output when PSSL = H. MNT2 output when PSSL = L.
48	MNT1	O	DA02 output when PSSL = H. MNT1 output when PSSL = L.
49	MNT0	O	DA01 output when PSSL = H. MNT0 output when PSSL = L.
50	APTR	O	Aperture correction control output. H when R channel.
51	APTL	O	Aperture correction control output. H when L channel.
52	VSS	—	GND.
53	XTAI	I	Input to 16.9344 MHz X'tal oscillator circuit. or 33.8688 MHz input.
54	XTAO	O	16.9344 MHz X'tal oscillator output.
55	XTSL	I	X'tal selection input. L when X'tal is 16.9344 MHz. H when 33.8688 MHz.
56	FSTT	O	2/3 divider output of the pins 53 and 54. Does not change with vari-pitch.
57	C4M	O	4.2336 MHz output. When vari-pitch is performed, it changes too.
58	C16M	O	16.2336 MHz output. When vari-pitch is performed, it changes too.
59	MD2	I	Digital-out ON/OFF control. ON at H, OFF at L.
60	DOUT	O	Digital-out terminal.
61	EMPH	O	H output when the playback disc has emphasis. L output without emphasis.
62	WFCK	O	WFCK (Write Frame Clock) output.
63	SCOR	O	H output when S0 or S1 of the subcode sync is detected.
64	SBSO	O	Serial output of Sub P to W.
65	EXCK	I	Clock input for SBSO read out.
66	SQSO	O	SubQ 8-bit and PCM peak level data. 16-bit output.
67	SQCK	I	Clock input for SQSO readout.
68	MUTE	I	Mute at H. Release at L.
69	SENS	O	SENS output. Output to CPU.
70	XRST	I	System reset. Reset at L.
71	DATA	I	Serial data input from CPU.
72	XLAT	I	Latch input from CPU. Latches serial data at fall-down edge.
73	VDD	—	Power supply (+3.5 V).
74	CLOK	I	Serial data transfer clock input from CPU.
75	SEIN	I	Sensor input from SSP.
76	CNIN	I	Track jump number counted signal input.
77	DATO	O	Serial data output to SSP.
78	XLTO	O	Serial data latch output to SSP. Latches at fall-down edge.
79	CLKO	O	Serial data transfer clock output to SSP.
80	MIRR	I	Mirror signal input. Used for jump of 128 track or more at auto sequencer.

# IC, $\mu$ PD78044BGF

Pin No.	Pin Name	I/O	Description
1	DO ON	O	Digital output. ON/OFF output.
2~7	NC	—	Not used.
8	VDD	—	PWR. +5 V power supply.
9	CM CLK	I/O	Serial clock I/O.
10	C DATA	O	Serial data output.
11	M DATA	I	Serial data input.
12	O-CLK	O	DSP serial clock output.
13	O-XLT	O	DSP serial latch output.
14	O-SQCLK	O	DSP sub Q read-out clock output.
15	O-DATA	O	DSP serial data output.
16	I-SQDATA	I	DSP sub Q data input.
17	RESET	I	System reset input.
18	I-SENS	I	DSP SENS input.
19	XRST	O	CD system reset output.
20	AVSS	—	PWR. GND potential of A/D converter input.
21	I-FOK	I	ASP FOK input.
22	I-GFS	I	DSP GFS input.
23	—	—	Connected GND.
24	I-ILSW	I	Pickup limit switch input.
25	I-OCSW	I	Tray OPEN/CLOSE switch input.
26~28	—	—	Connected GND.
29	AVDD	—	PWR. Analog power supply of A/D converter input.
30	AVREF	I	PWR. Reference voltage input of A/D converter input.
31	—	—	Connected GND.
32	NC	—	Open terminal.
33	VSS	—	PWR. GND potential.
34	X1	I	CLK. Terminal for 4.19 MHz clock oscillator.
35	X2	O	CLK. Terminal for 4.19 MHz clock oscillator.
36~38	NC	—	Not used.
39	C-BUSY	O	MPEG status output.
40	MSTBY	I	Main microprocessor status input.
41	CLOCK	O	Main microprocessor serial clock output.
42	DATA	O	Main microprocessor serial data output.
43	D-REQ	O	Main microprocessor status output.
44	I-KEY	I	Main microprocessor serial data input.
45	SCOR	I	DSP SCOR input.
46	M-BUSY	I	MPEG status signal input.
47	—	—	Connected GND.
48	IC	—	PWR. Connected to Vss.
49	MUTE L	O	L channel analog mute output.
50	MUTE R	O	R channel analog mute output.



Pin No.	Pin Name	I/O	Description
51	DSSENS	I	Turntable sensor input.
52	VDD	—	PWR. +5 V power supply.
53~64	NC	—	Not used.
65	O-TOPN	O	Tray OPEN output.
66	O-CLS	O	Tray CLOSE output.
67	O-DFWD	O	Turntable forward rotation output.
68	O-DRVS	O	Turntable reverse rotation output.
69, 70	NC	—	Not used.
71	VLOAD	—	PWR. -27 V power supply for FL pull-down.
72~76	NC	—	Not used.
77	VCD	O	VIDEO CD selection output.
78	CD FUNC	O	CD function selection output.
79	G-MUT	O	CDG mute output.
80	CD ON	O	FL. Digit output for FL display.

# IC, LC7872E

Pin No.	Pin name	I/O	Description
1, 2	S1, S2	—	DSP select pin for CD. (Connected to VDD)
3	SBCK	O	Subcode read/write clock.
4	SFSY	I	Subcode frame sync signal.
5	PW	I	Subcode read/write data.
6	SBSY	I	Subcode block sync signal.
7	VDD1	—	Power supply for digital block. (Connected to +5V)
8	CE	I	Control pin when serial input or serial output. (Connected to GND)
9	DO	O	Serial data output. (Connected to GND)
10	DI	I	Serial data input. (Connected to GND)
11	CL	I	Clock when inputting/outputting serial data. (Connected to GND)
12	MUTE	I	Control signal disabling the subcode.
13	VSS1	—	GND for digital block.
14	WE	O	DRAM control pin.
15	RAS	O	DRAM control pin.
16~23	A0~A7	O	DRAM address pin.
24	DB0	I/O	DRAM data pin.
25	CAS	O	DRAM control pin.
26	DB1	I/O	DRAM data pin.
27	DE	O	DRAM control pin.
28	DB2	I/O	DRAM data pin.
29	DB3	I/O	DRAM data pin.
30	CE	I	"L": Normal mode "H": Color bar output (Not used)
31	CDGM	O	"H" output when CDG disk. (Not used)
32	TRANS0	O	Transparency digital output. (Not used)
33	TRANS1	O	Transparency digital output. (Not used)
34	TRANS2	O	Transparency digital output. (Not used)
35	TRANS3	O	Transparency digital output. (Not used)
36	TRANS4	O	Transparency digital output. (Not used)
37	TRANS5	O	Transparency digital output. (Not used)
38	VSS2	—	Composite video DAC GND pin.
39	VDD2	—	Composite video DAC power supply pin. (Connected to +5V)
40	BIAS	O	Capacitor connecting pin for eliminating ripple.
41	VIDEO	O	Composite video output pin (8-bit DAC output).
42	TEST	I	Test pin. Set to "L" normally. (Connected to GND)
43	LINE	I	When NP2 pin is "H": H: 263H L: 262H When NP2 pin is "L": H: 312H L: 314H (Not used)
44	FSCIN	I	Subcarrier clock input pin. (feedback resistor is built in) (Connected to GND)
45	VSYN	O	Vertical sync signal output pin. (Not used)
46	TEST1	I	Test pin. Set to "L" normally. (Connected to GND)
47	YS	O	Superimpose control output. (Not used)
48	CSTNC	O	Composite sync signal output. (Not used)

Pin No.	Pin name	I/O	Description
49	GND	—	GND.
50	EFLG	O	Error status monitor pin. (Not used)
51	FSX	O	For error status monitor trigger. (Not used)
52	DEN	I	Disk information display enable. H: BGC L: Enable (Connected to GND)
53	PALID	I	External control pin when superimposing with PAL (pull-up resistor is built in). (Not used)
54	VDD3	—	Digital power supply (+5V)
55	FSC	O	Subcarrier clock output. NTSC mode: 3.579545 MHz PAL mode: 4.433619 MHz (Not used)
56	VDD4	—	Digital power supply (+5V)
57	RESET	I	Reset input pin.
58	N/P1	I	NTSC/PAL selection pin. (RGB encoder) "H": NTSC "L": PAL
59	N/P2	I	NTSC/PAL selection pin. (CD-G decoder) "H": NTSC "L": PAL
60	SON	I	Superimpose ON/OFF pin. (Connected to GND)
61	XIN2	I	Crystal oscillator 17.734476 MHz. (for PAL)
62	XOUT2	O	Crystal oscillator 17.734476 MHz. (for PAL)
63	XIN1	I	Crystal oscillator connection 14.31818 MHz. (for NTSC)
64	XOUT1	O	Crystal oscillator connection 14.31818 MHz. (for NTSC)

# IC, CXA1782BQ

Pin No.	Pin name	I/O	Description
1	FEO	O	Focus error amplifier output pin. This pin is connected to the FZC comparator input internally.
2	FEI	I	Focus error input pin.
3	FDFCT	I	Capacitor connection pin for time constant used when there is defect.
4	FGD	I	This pin is connected to GND via capacitor when high frequency gain of the focus servo is attenuated.
5	FLB	I	This is a pin where the time constant is externally connected to raise the low frequency gain of the focus servo.
6	FEO	O	Focus drive output.
7	FEM	I	Focus amplifier inverted input pin.
8	SRCH	I	This is a pin where the time constant is externally connected to generate the focus search waveform.
9	TGU	I	This is a pin where the selection time constant is externally connected to set the tracking servo the high frequency gain.
10	TG2	I	This is a pin where the selection time constant is externally connected to set the tracking high frequency gain.
11	FSET	I	Pin for setting peak of the phase compensator of the focus tracking.
12	TAM	I	Tracking amplifier inverted input pin.
13	TAO	O	Tracking drive output.
14	SLP	I	Sled amplifier non-inverted input pin.
15	SLM	I	Sled amplifier inverted input pin.
16	SLO	O	Sled drive output.
17	ISSET	I	The current which determines height of the focus search, track jump and sled kick is input.
18	VCC	—	+ 5 V power supply pin.
19	CLK	I	Serial data transfer clock input from CPU.
20	XLT	I	Latch input from CPU.
21	DATA	I	Serial data input from CPU .
22	XRST	I	Reset input pin. Reset at L.
23	COUT	O	Signal output to count the number of tracks.
24	SENS	O	FZC, DFCT, TZC, Gain or BAL is output depending on the command from CPU .
25	FOK	O	Output pin of the focus OK comparator.
26	CC2	O	Input pin where the DEFECT bottom hold output is capacitance coupled.
27	CC1	I	DEFECT bottom hold output pin.
28	CB	I	This is a pin where the DEFECT bottom hold capacitor is connected.
29	CP	I	This is a pin where the MIRR hold capacitor is connected and MIRR comparator non-inverted signal is input.
30	RFI	I	Input pin where the RF summing amplifier output is capacitance coupled.
31	RFO	O	RF summing amplifier output pin. (Eye pattern check point)
32	RFM	I	RF summing amplifier inverted input pin. Gain of RF amplifier is determined by the resistor connected between RFO and this pin.



Pin No.	Pin name	I/O	Description
33	LD	O	APC amplifier output pin.
34	PHD	I	APC amplifier input pin.
35~36	PHD1~2	I	RF I-V amplifier inverted input pin. These pins are connected to the A+C and B+D pins of the optical pickup.
37	FE BIAS	I	Bias adjustment pin of the focus error amplifier.
38~39	F~E	I	F and E IV amplifier non-inverted input pins. These pins are connected to the F and E of the optical pickup.
40	EI	—	Gain adjustment pin of the I-V amplifier E.
41	VEE	—	GND connection pin
42	TEO	O	Tracking error amplifier output pin. E-F signal is output.
43	LPFI	I	BAL adjustment comparator input pin.
44	TEI	I	Tracking error input pin.
45	ATSC	I	Window comparator input pin for detecting ATSC.
46	TZC	I	Tracking zero-cross comparator input pin.
47	TDFCT	I	Capacitor connection pin for the time constant used when there is defect.
48	VC	O	DC voltage output pin of VREF. (VDD/2)

# IC, CL480

Pin No.	Pin Name	I/O	Description
1	HSEL2	I	Host address bus.
2	-DS	I	Data strobe.
3	R/-W	I	Read/write.
4	CFLEVEL	O	Coded data FIFO level status. Open drain.
5	-DACK	O	Host data acknowledge. Open drain.
6	HD0	I/O	Host data bus.
7	VDD3	—	Power supply pin. Used in 3.3 V.
8, 9	HD1, HD2	I/O	Host data bus.
10	VSS	—	GND.
11~15	HD3~HD7	I/O	Host data bus.
16	VSS	—	GND.
17	-TEST	I	Test terminal. Normally fixed to High.
18	VSS	—	GND.
19	XTL IN	I	Global clock. 40.5 MHz.
20	XTL OUT	O	Global clock. 40.5 MHz.
21, 22	VDD3	—	Power supply pin. Used in 3.3 V.
23~28	MD0~MD5	I/O	Memory data bus.
29	VDD3	—	Power supply pin. Used in 3.3 V.
30, 31	MD6, MD7	I/O	Memory data bus.
32, 33	-MCE0, -MCE1	O	Chip enable.
34~37	MD8~MD11	I/O	Memory data bus.
38	VSS	—	GND.
39~42	MD12~MD15	I/O	Memory data bus.
43	VDDMAX	—	Power supply pin. Used in 5.0 V.
44	-LCAS	O	Lower digit, column address strobe.
45	-LCASIN	I	Lower digit, data latch enable.
46	VSS	—	GND.
47	-MWE	O	Write enable.
48	-UCAS	O	Higher digit, column address strobe.
49	VDD3	—	Power supply pin. Used in 3.3 V.
50	-UCASIN	I	Higher digit, data latch enable.
51, 52	RAS0, RAS1	O	Lower address strobe.
53~57	MA9~MA5	O	Memory address bus.
58	VSS	—	GND.
59~63	MA4~MA0	O	Memory address bus.
64	RESERVED	—	Reserved.
65	VDD3	—	Power supply pin. Used in 3.3 V.
66~72	VD0~VD6	O	Pixel data bus. RGB or YCbCr format.
73	VSS	—	GND.
74~76	VD7~VD9	O	Pixel data bus. RGB or YCbCr format.
77	VDD3	—	Power supply pin. Used in 3.3 V.

Pin No.	Pin Name	I/O	Description
78~80	VD10~VD12	O	Pixel data bus. RGB or YCbCr format.
81	VDD3		Power supply pin. Used in 3.3 V.
82~84	VD13~VD15	O	Pixel data bus. RGB or YCbCr format.
85	VSS	—	GND.
86~89	VD16~VD19	O	Pixel data bus. RGB or YCbCr format.
90	VSS	—	GND.
91~94	VD20~VD23	O	Pixel data bus. RGB or YCbCr format.
95	-VSYNC or CSY	I/O	Vertical sync signal.
96	-HSYNC	I/O	Horizontal sync signal.
97	-VOE	I	Video output enable.
98	VDD3	—	Power supply pin. Used in 3.3 V.
99	VCLK	I/O	Video clock.
100	VSS	—	GND.
101	-RESET	I	Hardware reset.
102	VSS	—	GND.
103	CD-C2PO	I	Data error. Used during CD-ROM data input.
104	CD-LRCK	I	LR clock.
105	CD-DATA	I	Serial data input from CD-DSP.
106	CD-BCK	I	Bit clock from CD decoder.
107	DA-LRCK	O	LR clock.
108	DA-DATA	O	Bit serial audio sample signal.
109	DA-BCK	O	Audio bit clock.
110	VDD3	—	Power supply pin. Used in 3.3 V.
111	DA-XCLK	I	External audio frequency clock.
112	VDD3	—	Power supply pin. Used in 3.3 V.
113	-INT	O	Interrupt request.
114	RESERVED	—	Reserved.
115	HOST_ENA	I	Host enable.
116	RAM_ENA	I	Boot ROM enable.
117	RESERVED	—	Reserved.
118	DAC_EMP	O	Output emphasis flag.
119	CDDA_EMP	I	Input emphasis flag.
120	RESERVED	—	Reserved.
121	-FMV_DET	O	FMV detection. L: FMV detected.
122	CDDA/VCD	O	Input data identification. H: CDDA. L: video CD.
123	VDDMAX	I	Power supply pin. Used in 5.0 V.
124	RESERVED	—	Reserved.
125	VSS	—	GND.
126	RESERVED	—	Reserved.
127, 128	HSEL0, HSEL1	I	Host address bus.

# IC, CXD1178Q

Pin No.	Pin Name	I/O	Description
1~8	R0~R7	I	Digital input.
9~16	G0~G7		
17~24	B0~B7		
25	BLK	I	Blanking pin. No signal at "H" (Output 0V). Output condition at "L".
26	$\overline{CE}$	I	Chip enable pin. No signal (Output 0V) at "H" and minimizes power consumption.
27	RCK	I	Clock pin. Moreover all input pins are TTL-CMOS compatible.
28	GCK		
29	BCK		
30, 31	DVSS	—	Digital GND.
32	VB	O	Connect a capacitor of about 0.1 $\mu$ F.
33	AVSS	—	Analog GND.
34	VREF	I	Set full scale output value.
35	IREF	I	Connect a resistance 16 times "16R" that of output resistance value "R".
36	$\overline{RO}$	O	Inverted current output pin. Normally dropped to analog GND.
37	RO	O	Current output pin. Voltage output can be obtained by connecting a resistance.
38	$\overline{GO}$	O	Inverted current output pin. Normally dropped to analog GND.
39	GO	O	Current output pin. Voltage output can be obtained by connecting a resistance.
40	$\overline{BO}$	O	Inverted current output pin. Normally dropped to analog GND.
41	BO	O	Current output pin. Voltage output can be obtained by connecting a resistance.
42	VG	I	Connect a capacitor of about 0.1 $\mu$ F.
43~46	AVDD	—	Analog VDD.
47, 48	DVDD	—	Digital VDD.



# IC, MC68HC705

Pin No.	Pin Name	I/O	Description
1	RST	I	Reset.
2	IRQ	I	MPEG DECODER request signal.
3	VPP	—	ROM write power.
4~11	PA7~PA0	I/O	MPEG DECODER data bus 7~0.
12~14	PB0~PB2	O	MPEG DECODER register select 0~2.
15	PB3	O	MPEG DECODER data R/W select.
16	PB4	O	MPEG DECODER data strobe.
17	PB5	I	MPEG DECODER data acknowledge.
18	PB6	I	CD-I bit stream detect.
19	PB7	I	CD DA/VCO select.
20	VSS	—	Power ground.
21	PC7	I	MPEG DECODER FIFO status.
22, 23	PC6, PC5	—	Not used.
24	PC4	O	MPEG DECODER reset signal.
25, 26	PC3, PC2	—	Not used.
27, 28	PC1, PC0	O	Key scan out 1, 0.
29	RDI	—	Not used.
30	TD $\bar{O}$		
31~34	PD2~PD5	I	Key scan input 0~3.
35	TCMP	O	Remote data out.
36	PD7	—	Not used.
37	CAP	I	Remote data in.
38, 39	OSC2, OSC1	I	X <sub>tal</sub> in.
40	VDD	—	Power 5V.

# IC, $\mu$ PD6376

Pin No.	Pin Name	I/O	Description
1	FS-SEL	I	As this terminal is "Low" or open, L-ch data and R-ch data are inputted for serial data by the pin 15. As this terminal is "High", L-ch data is inputted by the pin 15, R-ch data is inputted by the pin 14. (Pull-downed by the 100 k $\Omega$ resistance in IC.)
2	D. GND	—	Ground terminal for the logic circuit.
3	NC	—	—
4	D. VDD	—	Power supply terminal for the logic circuit .
5	A. GND	—	Ground terminal for the analog circuit.
6	R. OUT	O	Output terminal for the right analog signal.
7, 8	A. VDD	—	Power supply terminal for the analog circuit.
9, 10	R. REF, L. REF	—	Operational Amplifier reference bias terminal. Normally connected to A.GND via a capacitor.
11	L. OUT	O	Output terminal for the left analog signal.
12	A. GND	—	Ground terminal for the analog circuit.
13	LRCK	I	As the pin 1 is "Low" or open, this is input terminal for left/right identification signal. As the pin 1 is "High", this is input terminal for word identification signal of input data.
14	LRSEL	I	As the pin 1 is "Low" or open, this is left/right selection terminal for LRCK signal. At "High" of LRCK signal, set LRSEL pin at "Low" for L-ch DATA input. At "Low" of LRCK signal, set LRSEL pin at "High" for L-ch DATA input. As the pin 1 is "High", this is input terminal for R-ch serial data.
15	DATA	I	As the pin 1 is "Low" or open, this is input terminal for L-ch and R-ch serial data. As the pin 1 is "High", this is input terminal for L-ch serial data.
16	BCK	I	Input terminal for read clock of serial input data.

# IC, CXA1645M

Pin No.	Pin Name	I/O	Description
1	GND	—	GND.
2	RIN	I	Analog RGB input terminals.
3	GIN		
4	BIN		
5	NC	—	N. C.
6	SCIN	I	Subcarrier input terminal.
7	NPIN	I	NTSC, PAL mode select terminal. NTSC: Vcc, PAL: GND.
8	BFOUT	O	Output terminal to monitor the BF pulse. Unable to drive 75 $\Omega$ load.
9	YCLPC	—	External time constant for Y signal clamp is connected to this terminal.
10	SYNCIN	I	Composite sync signal input terminal. Input at TTL level. SYNC period at L ( $\leq 0.8$ V). H ( $\geq 2.0$ V).
11	NC	—	N. C.
12	VCC	—	Power supply terminal.
13	IREF		Terminal which determines internal reference current.
14	VREF	—	Internal reference voltage terminal.
15	COUT	O	Chroma signal output terminal.
16	YOUT	O	Y signal output terminal.
17	YTRAP	I	Terminal to reduce cross-color due to subcarrier frequency component included in the Y signal.
18	FO	I	fo adjustment terminal of internal filter. The following resistor is connected between GND depending upon NTSC or PAL mode. NTSC: 20 k $\Omega$ ( $\pm 1\%$ ) PAL: 16 k $\Omega$ ( $\pm 1\%$ ).
19	VCC	—	Power supply terminal.
20	CVOUT	O	Composite video signal output terminal.
21	BOUT	O	Analog RGB signal output terminal
22	GOUT		
23	ROUT		
24	GND	—	GND.

# IC, HD6433042F06F

Pin No.	Pin Name	I/O	Description
1	VCC	I	Power supply.
2	CDG DIN	O	CD-G decoder serial data signal.
3	CDG XLT	O	CD-G decoder latch signal.
4	CDG CLK	O	CD-G decoder clock signal.
5~7	GADSP0~2	O	Gate array DSP format 0~2.
8	$\overline{\text{DRQ CDDEC}}$	I	CD-ROM decoder data request signal.
9	$\overline{\text{DRQ MPEG}}$	I	MPEG decoder data request signal.
10	$\overline{\text{RESO}}$	O	External reset output.
11	GND	I	GND.
12	TXD0	O	Serial interface (RXD).
13	TXD1	O	CXD for test.
14	RXD0	I	Serial interface (RXD).
15	RXD1	I	RXD for test.
16	SCK0	I/O	Serial interface (SCK).
17	$\overline{\text{MPRST}}$	O	Peripheral reset. L: RESET ON.
18~21	D0~D3	I/O	Data bus 0~3.
22	GND	I	GND.
23~34	D4~D15	I/O	Data bus 4~15.
35	VCC	I	Power supply.
36~43	A0~A7	O	Address bus 0~7.
44	GND	I	GND.
45~56	A8~A19	O	Address bus 8~19.
57	GND	I	GND.
58	WAIT	I	External wait signal.
59	GLUE ON	O	DMA glue circuit enable 0: OFF. 1: ON.
60	M EMPH	O	MPEG AUDIO emphasis 0: OFF. 1: ON.
61	FAI	O	System clock output.
62	$\overline{\text{STBY}}$	I	Standby. (Hardware standby mode at low level).
63	RES	I	Reset input. (Reset at low).
64	NMI	I	Non-maskable interrupt. (Non-maskable interrupt is requested).
65	GND	I	GND.
66	EXTAL	I	External crystal is connected to this pin.
67	XTAL	I	External crystal is connected to this pin.
68	VCC	I	Power supply.
69	$\overline{\text{AS}}$	O	Address strobe signal.
70	$\overline{\text{RD}}$	O	External address read enable signal.
71	$\overline{\text{HWR}}$	O	External address high write enable signal.
72	$\overline{\text{LWR}}$	O	External address low write enable signal.
73~75	MOD0~MOD2	I	Mode terminal. Operating mode is set using this terminal.
76	AVCC	I	Power supply terminal of A/D converter and D/A converter.
77	VREF	I	Reference voltage input to A/D converter and D/A converter.



Pin No.	Pin Name	I/O	Description
78, 79	P70, P71	I	IN port 0, 1 for test.
80	PAL/NTSC	I	PAL/NTSC status 0: NTSC. 1: PAL.
81	REQ CD	I	Serial interface (REQ_CD).
82~85	P74~P77	I	Reserve.
86	AGND	I	GND terminal of A/D converter and D/A converter.
87	INT CDDR $\overline{V}$	I	Serial interface interrupt.
88	INT CDDEC $\overline{C}$	I	CD-ROM decoder interrupt.
89	INT MPEG $\overline{C}$	I	MPEG decoder interrupt.
90	IRQ $\overline{3}$	I	Reserve.
91	P84	I	Reserve.
92	GND	I	GND.
93	DONE CDDEC	O	CD-ROM decoder DONE signal.
94	DONE MPEG	O	MPEG decoder DONE signal.
95	CDG VOFF	O	CD-G decoder video OFF signal. 1: VOFF.
96	SYS MUTE1	O	Audio mute 1 signal. 1: mute ON.
97	INTFLDO	I	EVEN/OFF input signal. 0: EVEN. 1: ODD.
98	SW AUDIO	O	Audio select signal. 0: CD-G/DA. 1: MPEG.
99	SYS MUTE0 $\overline{C}$	O	Audio mute 0 signal. 0: mute on.
100	REQ MPEG	O	Serial interface (REQ MPEG)

# IC, $\mu$ PD65622GF-239-3B9

Pin No.	Pin Name	I/O	Description
1	LRCKCD	O	Main data signal to CXD1186.
2	SDATACD	O	
3	BCKCD	O	
4	C2POCD	O	
5	CSROMH	O	Chip select signal to CXD1186 (host side).
6	CSROMC	O	Chip select signal to CXD1186 (CPU side).
7	DACKROM	O	DMA acknowledge signal to CXD1186.
8	HDRQ	I	Data transfer request signal from CXD1186. This signal is active high.
9	ROMRD	O	Read/write signal to CXD1186.
10	ROMWR	O	Read/write signal to CXD1186.
11	EMPHI	I	This signal allows inputting the main data from the CD drive.
12	GND	—	GND.
13	SDATAI	I	This signal allows inputting the main data from the CD drive.
14	BCKI	I	
15	LRCKI	I	
16	C2POI	I	
17	GND	—	GND.
18	16.9M	I	16.9344 MHz oscillator circuit input signal.
19	16.9F	O	16.9344 MHz oscillator circuit output signal.
20	GND	—	GND.
21	GSFSY	I	Write frame clock signal used to input the sub data from CD drive.
22	EMPO	O	Main data signal to CXD1186.
23	LRCKO	O	Audio data signal to audio DAC.
24	SDATAO	O	Audio data signal to audio DAC.
25	RESET	O	Active high reset signal.
26	GND	—	GND.
27	BCKCO	O	Audio data signal to audio DAC.
28	GGLUE	I	The input signal which makes the glue circuit valid from GSFSY input.
29	GGSFSY	O	Not used.
30	SDATAMA	I	Audio data signal from $\mu$ PD61010.
31	BCKMA	I	
32	LRCKMA	I	
33	GND	—	GND.
34	VCC	—	Vcc.
35	16.9M	O	16.9344 MHz output signal.
36	GND	—	GND.
37	DS	O	Control signal to $\mu$ PD61010.
38	CSMPEG	O	Chip select signal to CXD1186.
39	R/W	O	Control signal to $\mu$ PD61010.
40	INT	I	Interrupt request signal from $\mu$ PD61010. This signal is active high.
41	HDAK	I	Data acknowledge signal from $\mu$ PD61010.

Pin No.	Pin Name	I/O	Description
42	$\overline{\text{DREQ}}$	I	DRAM data transfer request signal from $\mu\text{PD61010}$ .
43	$\overline{\text{DACKMP}}$	O	DMA acknowledge signal to $\mu\text{PD61010}$ .
44	$\overline{\text{DAK}}$	I	Bit stream data transfer request signal from $\mu\text{PD61010}$ .
45	$\overline{\text{CSCCELL}}$	O	Chip select signal to standard cell.
46	GND	—	GND.
47	$\overline{\text{RESET}}$	I	System reset signal.
48	GND	—	GND.
49	$\overline{\text{CSRAM}}$	O	Chip select signal to the system RAM.
50	$\overline{\text{LWR}}$	I	Lower data write signal from CPU.
51	$\overline{\text{HWR}}$	I	Upper data write signal from CPU.
52	$\overline{\text{RD}}$	I	Data read signal from CPU.
53	GND	—	GND.
54	$\overline{\text{AS}}$	I	Address strobe signal from CPU.
55	$\overline{\text{CSIO}}$	O	Optional chip select signal.
56~63	A19~A12	I	Address signal from CPU.
64	GND	—	GND.
65	$\overline{\text{WAIT}}$	O	Wait signal to CPU.
66	GLUEON	I	This signal makes the glue logic valid in order to prevent CPU DMAC from trouble. This circuit is made valid at high.
67	$\overline{\text{SEL12}}$	I	Input signal to select 12 MHz or 16 MHz CPU clock.
68	EMPMA	I	Audio data signal from $\mu\text{PD61010}$ .
69	GND	—	GND.
70	FAI	I	Basic clock signal (12 MHz) from CPU.
71	GND	—	GND.
72	VCC	—	Vcc.
73	GND	—	GND.
74	$\overline{\text{INTMPEG}}$	O	Interrupt request signal to CXD1186.
75	SWAUDIO	I	Selection signal between MPEG audio and CD-DA audio signals.
76	$\overline{\text{DRQ1}}$	O	DMA transfer request signal to $\mu\text{PD61010}$ .
77	$\overline{\text{DRQ0}}$	O	DMA transfer request signal to CXD1186.
78~80	GADSP2~0	I	Format select signal to convert format of the main data from CD drive.

# IC, CXD1186CR

Pin No.	Pin Name	I/O	Description
1~4	A0~A3	I	CPU address signal.
5	HMDS	I	Host mode select signal.
6, 7	HA0, HA1	I	Host address signal.
8	XHCS	I	Chip select negative logic signal from the host.
9	HINT	O	Interrupt request negative logic signal to the host.
10	GND	—	GND.
11	XHRD	I/O	Data read strobe signal from the host or to the SCSI control IC.
12	XHWR	I/O	Data write strobe signal from the host or to the SCSI control IC.
13~20	HDB0~HDB7	I/O	Host data bus.
21	GND	—	GND.
22	HDBP	I/O	Error flag. Host data bus.
23	XRST	I	Reset negative logic signal.
24	HDRQ	O	Data request positive logic signal to the host. Or DMA acknowledge negative logic signal to the SCSI control IC.
25	XHAC	I	DMA acknowledge negative logic signal from the host Or data request positive logic signal from the SCSI control.
26	XTC	I	Terminal count negative logic signal.
27	ADRQ	I	DMA request positive logic signal from ADP.
28	XAAC	O	DMA acknowledge negative logic signal to ADP.
29, 30	BA0, BA1	O	Buffer memory address.
31	VDD	—	Power supply (+5 V) terminal.
32~39	BA2~BA9	O	Buffer memory address.
40	GND	—	GND.
41~46	BA10~BA15	O	Buffer memory address.
47	XMOE	O	Buffer memory output enable negative logic signal.
48	XMWR	O	Buffer memory write negative logic signal.
49	BDB0	I/O	Buffer memory data bus.
50	GND	—	GND.
51~57	BDB1~BDB7	I/O	Buffer memory data bus.
58	BDBP	I/O	Buffer memory pointer data bus.
59	XTL2	O	X'TAL oscillator circuit output terminal.
60	XTL1	I	X'TAL oscillator input terminal.
61	GND	—	GND.
62	HCLK	O	X'TAL 1 divided-by-2 clock signal.
63	LRCK	I	LR clock from CD player.
64	DATA	I	Serial data from CD player.
65	BCLK	I	Bit clock from CD player.
66	C2P0	I	C2 pointer from CD player.
67~70	DB0~DB3	I/O	CPU data bus.
71	VDD	—	Power supply (+5 V) terminal.
72~75	DB4~DB7	I/O	CPU data bus.



Pin No.	Pin Name	I/O	Description
76	XCS	I	Chip select negative logic signal from CPU.
77	XRD	I	IC internal register read-out strobe negative logic signal from CPU.
78	XWR	I	IC internal register write strobe negative logic signal from CPU.
79	INT	O	Interrupt request signal to CPU.
80	GND	—	GND.

### IC, TLC29321PW

Pin No.	Pin Name	I/O	Description
1	VDD	—	Power supply terminal to the internal logic circuit.
2	VCO LS	I	VCO output frequency divide-by-2 divider select terminal. The VCO output frequency can be divided by 2 and output as this terminal is controlled by external logic.
3	VCOO	O	VCO output terminal. Goes to low level during inhibit.
4, 5	FIN-A, FIN-B	I	2 input terminal for edge difference detection between the reference frequency (fREF-IN) and the frequency from external counter. The fREF-IN is input to the FIN-A terminal normally, and the divided or multiplied frequency from external counter is input to the FIN-B terminal.
6	PFDO	O	PFD output terminal.
7	GND	—	Internal logic circuit GND terminal.
8	NC	—	N.C.
9	PFDIH	I	PFD inhibit function control terminal.
10	VCOIH	I	VCO inhibit function control terminal.
11	A GND	—	VCO GND.
12	VCOI	I	VCO control voltage input. The VCO oscillator control voltage is input from an external low-pass filter to form PLL.
13	RBIAS	I	External resistor is connected to this terminal for setting the VCO oscillation frequency. A bias resistor is connected between this terminal and power supply line to supply bias for internal VCO oscillation and for setting and adjusting the oscillating frequency.
14	A VDD	—	VCO power supply voltage terminal.

# IC, HD49307

Pin No.	Pin No.	I/O	Description
1~5	G4~G8	I	Digital input terminal.
6	B1	—	N. C.
7	NC	I	Digital input terminal.
8~12	B2~B6	I	Digital input terminal.
13~15	NC	—	N. C.
16, 17	B7, B8	I	Digital input terminal.
18	NC	—	N. C.
19	RCLK	I	R channel clock input.
20	GCLK	I	G channel clock input.
21	BCLK	I	B channel clock input.
22	DVSS	—	Digital GND.
23	DVDD	—	Digital power supply.
24	NC	—	N. C.
25	CBU	—	External phase compensation capacitance connection terminal.
26	CBL	—	Bypass capacitance connection terminal.
27~29	NC	—	N. C.
30	VRREF	I	Reference voltage input terminal.
31	AVSS	—	Analog GND.
32	AVDD	—	Analog power supply.
33	BOUT	O	B channel analog signal output terminal.
34	AVDD	—	Analog power supply.
35	NC	—	N. C.
36	GOUT	O	G channel analog signal output terminal.
37	AVDD	—	Analog power supply.
38	ROUT	O	R channel analog signal output terminal.
39	AVSS	—	Analog GND.
40	AVDD	—	Analog power supply.
41	DVDD	—	Digital power supply.
42	R1	I	Digital input terminal.
43~44	NC	—	N. C.
45~51	R2~R8	I	Digital input terminal.
52~54	G1~G3	I	Digital input terminal.
55, 56	NC	—	N. C.

# IC, $\mu$ PD61010

Pin No.	Pin Name	I/O	Description
1	VDD	—	+5 V power supply.
2~6	HD9~5	I/O	Host data bus.
7	VDD	—	+5 V power supply.
8	GND	—	GND.
9~13	HD4~0	I/O	Host data bus.
14	VDD	—	+5 V power supply.
15	GND	—	GND.
16	$\overline{\text{DREQ}}$	O	DMA request signal.
17	$\overline{\text{DACK}}$	I	DMA acknowledge signal.
18	HSEL	I	Signal to select the host CPU access method.
19	DRQ	I	Data input request for bit stream input from CD-ROM decoder.
20	VDD	—	+5 V power supply.
21	GND	—	GND.
22	$\overline{\text{DAK}}$	O	Data input response for bit stream input from CD-ROM decoder, or DMA input request for code input.
23	$\overline{\text{DRD}}$	O	Bit stream input approval signal.
24, 25	NC	—	N. C.
26~33	CD0~7	I	Data bus for bit stream input from CD-ROM decoder.
34	VDD	—	+5 V power supply.
35	GND	—	GND.
36~39	MD7~4	I/O	DRAM data bus.
40	VDD	—	+5 V power supply.
41, 42	GND	—	GND.
43~46	MD3~0	I/O	DRAM data bus.
47, 48	MD15, 14	I/O	DRAM data bus.
49	VDD	—	+5 V power supply.
50	GND	—	GND.
51~56	MD13~8	I/O	DRAM data bus.
57	VDD	—	+5 V power supply.
58	GND	—	GND.
59~64	MA0~5	O	DRAM address bus.
65	VDD	—	+5 V power supply.
66	GND	—	GND.
67~69	MA6~8	O	DRAM address bus.
70	$\overline{\text{RAS}} \text{ I}$	O	DRAM RAS signal.
71	$\overline{\text{RAS}} \text{ O}$	O	DRAM RAS signal.
72	$\overline{\text{CAS}}$	O	DRAM CAS signal.
73	VDD	—	+5 V power supply.
74	$\overline{\text{WE}}$	O	Write enable to DRAM.
75~77	NC	—	N. C.
78	VOE	I	Video data output enable.

Pin No.	Pin Name	I/O	Description
79, 80	GND	—	GND.
81	VDD	—	+5 V power supply.
82	NC	—	N. C.
83	FLDI	I	Field signal (odd/even)
84	HDI	I	Horizontal sync signal.
85	VDI	I	Vertical sync signal.
86	VDCLK	I	Video data output clock (13.5 MHz).
87	VDD	—	+5 V power supply.
88~91	VDATA23~20	O	Video data output bus.
92	GND	—	GND.
93	VDD	—	+5 V power supply.
94~97	VDATA19~16	O	Video data output bus.
98, 99	VDATA15, 14	O	Video data output bus.
100	VDD	—	+5 V power supply.
101	GND	—	GND.
102~105	VDATA13~10	O	Video data output bus.
106	VDD	—	+5 V power supply.
107	GND	—	GND.
108~112	VDATA9~5	O	Video data output bus.
113	VDD	—	+5 V power supply.
114	GND	—	GND.
115~119	VDATA4~0	O	Video data output bus.
120	VDD	—	+5 V power supply.
121, 122	GND	—	GND.
123	DO	O	Video data output bus.
124	BCK	O	Video data output clock.
125	LRCK	O	L/R channel identification signal.
126	MCLK	O	Audio master clock.
127	NC	—	N. C.
128	AUCLK	I	Internal audio decoder system clock.
129	VDD	—	+5 V power supply.
130~132	NC	—	N. C.
133	VDD	—	+5 V power supply.
134	$\overline{\text{RESET}}$	I	Reset signal.
135	CLK	I	System clock (27 MHz)
136	GND	—	GND.
137	$\overline{\text{DS}}$	I	Data strobe signal.
138	R/ $\overline{\text{W}}$	I	Read/write select.
139	$\overline{\text{CS}}$	I	Chip select.
140~145	HADR0~5	I	Host address bus.
146, 147	GND	—	GND.



Pin No.	Pin Name	I/O	Description
148	INT	O	Interrupt signal.
149	HDAK	O	Bus cycle response signal.
150	VDD	—	+5 V power supply.
151	GND	—	GND.
152~157	HD15~10	I/O	Host data bus.
158	VDD	—	+5 V power supply.
159, 160	GND	—	GND.

## IC, $\mu$ PD63210GT

Pin No.	Pin Name	I/O	Description
1	TSEL	I	Test selection input.
2	RST	I	Reset input.
3	XTO	O	External crystal oscillator is connected to this pin.
4	XTI	I	External crystal oscillator is connected to this pin.
5	MCKO	O	Master clock output.
6	CKSEL	I	Clock selection input.
7	CLK	I	Bit clock input.
8	SI	I	Data input.
9	LRCK	I	LR clock input.
10	DEFS1	I	Deemphasis selection input 1.
11	DEFS2	I	Deemphasis selection input 2.
12	DSEL	I	Double speed playback selection input..
13	SMUTE	I	Soft mute selection input.
14	BSEL	I	Data bit length selection input.
15	DGND	—	Digital GND.
16	AGND	—	Analog GND.
17	RO	O	D/A converter output (R channel).
18	AOR	O	Filter amplifier output (R channel).
19	ANIR	I	Filter amplifier (-) input (R channel).
20	APIR	I	Filter amplifier (+) input (R channel).
21	RREF	—	Reference (R channel).
22	LREF	—	Reference (L channel).
23	APIL	I	Filter amplifier (+) input (L channel).
24	ANIL	I	Filter amplifier (-) input (L channel).
25	AOL	O	Filter amplifier output (L channel).
26	LO	O	D/A converter output (L channel).
27	AVDD	—	Analog power supply.
28	DVDD	—	Digital power supply.

# IC, TC170C100AF

Pin No.	Pin Name	I/O	Description
1~5	YIN4~0	I	Y signal from MPEG chip.
6	GND	—	GND.
7~14	UIN7~0	I	U signal from MPEG chip.
15	GND	—	GND.
16, 17	VIN7, 6	I	V signal from MPEG chip.
18	VCC	—	Power supply terminal.
19~24	VIN5~0	I	V signal from MPEG chip.
25	GND	—	GND.
26	FLDO	O	Odd/even signal output of a field.
27	HDO	O	HSYNC signal to MPEG chip.
28	VDO	O	VSNC signal to MPEG chip.
29	PCP	O	Clamp signal output.
30	CBLK	O	Blanking signal output (used depending upon type of DAC).
31	GND	—	GND.
32	FSC	O	Sub carrier output (Divided-by-four of NTSC: 14.31818 MHz. PAL: 17.734475 MHz).
33	CDG/MPEG	O	CD-G or MPEG play selector signal to external RGB video selector.
34	TEST0	I	Operation mode setting terminal.
35	GND	—	GND.
36	13.5M	O	13.5 MHz output.
37	GND	—	GND.
38~43	R OUT7~2	O	Y/R signal output (Output format can be selectable in Y/R).
44	GND	—	GND.
45, 46	R OUT1, 0	O	Y/R signal output (Output format can be selectable in Y/R).
47~54	G OUT7~0	O	U/G signal output (Output format can be selectable in U/G).
55	VCC	—	Power supply terminal.
56~63	B OUT7~0	O	V/B signal output (Output format can be selectable in V/B).
64	GND	—	GND.
65	27M	I	27 MHz input.
66	TEST1	I	Operation mode setting terminal.
67	SHSYNC	O	Comparison clock for PLL synchronizing CLK.
68	MHSYNC	O	Reference clock for PLL synchronizing CLK.
69	VCC	—	Power supply terminal.
70	OSC1	I	14.31818 MHz input port (crystal oscillation) when supporting NTSC.
71	OSC2	O	NTSC: 14.31818 MHz crystal oscillation output terminal.
72, 73	GND	—	GND.
74	OSC3	I	17.734475 MHz input port (crystal oscillation) when supporting PAL.
75	OSC4	O	17.734475 MHz crystal oscillation output terminal.
76	VCC	—	Power supply terminal.
77, 78	TEST2, 3	I	Operation mode setting terminal.
79	FMOD	I	FLDO output HL inversion selection signal.
80	PMOD	I	PCP output HL inversion selection signal.

Pin No.	Pin Name	I/O	Description
81	GND	—	GND.
82~85	T15~T12	I	RAM data input terminals 15 - 12 during RAM check.
86	T11OP3	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
87	T10OP2	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
88	T9OP1	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
89	T8OP0	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
90	VCC	—	Power supply terminal.
91	$\overline{\text{GHSYNC}}$	I	$\overline{\text{HSYNC}}$ signal from CD-G decoder.
92	$\overline{\text{GVSYNC}}$	I	$\overline{\text{VSYNC}}$ signal from CD-G decoder.
93	$\overline{\text{GCSYNC}}$	I	$\overline{\text{CSYNC}}$ signal from CD-G decoder.
94	GND	—	GND.
95~98	T7~4	I	RAM data input terminals 7 - 4 during RAM check.
99	T3IP3	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
100	T2IP2	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
101	T1IP1	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
102	T0IP0	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
103	GND	—	GND.
104	4FSC	O	104 NTSC: 14.31818 MHz. PAL: 17.734475 MHz buffer output.
105	GND	—	GND.
106	RAMCE	I	Chip enable signal for checking internal RAM and ROM check. (Fixed to low normally).
107	RAMW	I	Read/write signal for checking internal RAM and ROM check. (Fixed to low normally).
108	XT2C	I	XT2C input (used for HYNC DL delay).
109	GND	—	GND.
110	$\overline{\text{RST}}$	I	Input port of the reset signal.
111	GND	—	GND.
112	PAL/NTSC	I	PAL/NTSC selector port.
113	HSYNCIN	O	Inverted output of $\overline{\text{HYNCS}}$ IN.
114	$\overline{\text{HSYNCIN}}$	I	$\overline{\text{SYNC}}$ signal from VST (only when supporting FMV engine).
115	$\overline{\text{VSYNCIN}}$	I	$\overline{\text{VSYNC}}$ from VSC. (only when supporting FMV engine).
116	GND	—	GND.
117~124	D7~0	I/O	CPU data bus signal.

Pin No.	Pin Name	I/O	Description
125	VCC	—	Power supply terminal.
126	CMOD	I	CLBK output HL inversion selection signal.
127	VOD	I	Video output disable.
128	VCD/FMV	I	VIDEO CD/DMV engine selection port.
129	$\overline{CS}$	I	Chip select signal.
130	$\overline{RD/LDS}$	I	READ signal from CPU $\overline{RD}$ (when supporting H8). $\overline{LD}$ (when supporting 680009).
131	$\overline{WR/R/W}$	I	$\overline{WRITE}$ signal from CPU $\overline{WR}$ (when supporting H8). R/W (when supporting 680009).
132~134	A2~0	I	Address signal from CPU.
135	H8/68	I	CPU H8-325/68000 selection port.
136	GND	—	GND.
137	$\overline{HSYNCO}$	O	Horizontal sync output.
138	$\overline{VSYNCO}$	O	Vertical sync output.
139	$\overline{CSYNCO}$	O	Composite sync output. $\overline{CSYNC}$ signal from video encoder.
140	SMOD	I	13.5 MHz $\uparrow \downarrow$ selection of SYNC signal output. Selection is possible at the final stage of $\overline{HDO}$ , $\overline{VDO}$ , $\overline{HSYNCO}$ , $\overline{VSYNCO}$ , $\overline{CSYNCO}$ , SHYNC, PCP, CBLK, FLDO. (However, $\overline{HSYNCO}$ , $\overline{VSYNCO}$ , $\overline{CSYNCO}$ are supported during SYNC output of the CD-G decoder.)
141	VCC	—	Power supply terminal.
142~144	YIN7~5	I	Y signal from MPEG chip.



# IC, MB89627

Pin No.	Pin Name	I/O	Description
1	CCLK	O	SSP, DSP Control Clock.
2	DATA	O	SSP, DSP Control Data.
3	SENS	I	SSP, DSP Status.
4	XLAT	O	SSP, DSP Command Latch.
5	XRST	O	SSP, DSP Reset.
6	TVMSW	O	OFF/NTSC/PAL/PAL60/PAL AUTO/AUTO/TEST. *NOTE
7	DMUTE	O	Digital Mute.
8	AMUTE	O	Analog Mute.
9	LDON	O	Servo PCB Power on.
10	VCDRST	O	Video CD Reset.
11	OPTON	O	Optical Digital Output ON.
12	VCC	—	A/D Converter VCC.
13	VCC	—	A/D Converter VREF.
14	VSS	—	A/D Converter VSS.
15	HOSTIRQ	I	Host CPU Interrupt Request.
16	SCOR	I	Subcode Sync 0. (Subcode IRQ)
17	ILSW	I	Inter Limit Switch.
18	VCDIRQ	I	Video CD Decoder Interrupt Request.
19	N. C.	I	Not used.
20	RST	I	CPU Reset.
21	MODE0	I	CPU MODE. (Pull-down)
22	MODE1	I	CPU MODE. (Pull-down)
23	CLKIN	O	8MHz System Clock.
24	CLKOUT	I	8MHz System Clock.
25	VSS	—	GND.
26	ALE	O	Address Latch Strobe.
27	RD	O	Data Read Strobe.
28	WR	O	Data Write Strobe.
29	CLK	O	Clock out.
30	READY	I	Video CD Decoder Ready.
31	OSDCS	O	OSDC Enable.
32	OSDCLK	O	OSDC Data Clock.
33	OSDSIN	O	OSDC Data.
34~41	A8~A15	O	Address Bus 8~15.
42~49	AD0~AD7	I/O	Address/Data Bus 0~7.
50	VSS	—	GND.
51	VCD/CDG	O	Video CD/CDG Switch.
52	HCLK	I	Host CPU Control Clock.
53	ST	O	Host CPU Control Send Data.
54	RT	I	Host CPU Control Receive Data.
55	TRACK	I	Travase Counter.

Pin No.	Pin Name	I/O	Description
56	ENCRST	O	Video Encoder Reset.
57	DVCC	—	DVCC.
58	PAL/PAL60	O	PAL/PAL60 Switch.
59	XNTSC	O	PAL/NTSC Switch.
60	SQCK	O	Subcode Q Read Clock.
61	SQSO	I	Subcode Q Serial Data.
62	BUSY	I/O	Host CPU I/F Busy Signal.
63	FOK	I	Focus Servo OK Detect.
64	GFS	I	Frame Sync Detect.

#### Note

- Analog input (TVMSW: 6 pin) of the microprocessor is divided into 7, then controlled.
- The output are the command setting (Set Video Format) to the two ports of PAL/PAL60 (58 pin), XNTSC (59 pin) and IC301 (CL484).

TVMSW (6 pins)		DISC encoding system	TV output mode	PAL/PAL60 (58 pins)	XNTSC (59 pins)	Set Video Format
Volt (V)	Mode					
5.00	OFF	—	Not used (NTSC output mode).			
4.58	NTSC	—	NTSC	H	L	NTSC
3.75	PAL	—	PAL	H	H	PAL
2.92	PAL60	—	PAL60	L	H	NTSC
2.08	PAL AUTO	NTSC	PAL60	L	H	NTSC
		PAL	PAL	H	H	PAL
1.25	AUTO	NTSC	NTSC	H	L	NTSC
		PAL	PAL	H	H	PAL
0.42	TEST	—	For servo circuit adjustment (NTSC output mode).			
0.00						

- \*1 As to identification of the disc encoding system, it is identified from the V\_SIZE (1A1h/word) of the MPEG data.
- \*2 “For servo circuit adjustment” is the process during adjustment (when variable resistor is operated by service engineer) that the microprocessor enters the emergency process routine if the servo system goes extremely out of the servo range.
- \*3 In addition to the above, ENCRST (56 pin) is the reset signal for TV encoder, issues the active “L” pulse when each of the input port of CDGSW, NTB, CVSY, HSY, PIXCLK, GCLK, PAL60B and VCLK of IC401 (BU1417AK) has changed as follows:
- ① When the power is supplied to the circuit boards of the CD block,
  - ② When starting to reach TOC.
  - ③ The modes have changed as follows:
    - TVMSW is switched.
    - Switching of encoding system owing to exchange of video CD disc
    - Exchange of video CD disc with the CD-DA or CD-G.

# IC, CL484

Pin No.	Pin Name	I/O	Description
1	HSEL2	I	Host address bus.
2	-DS	I	Data strobe.
3	R/-W	I	Read/write.
4	CFLEVEL	O	Coded data FIFO level status. Open drain.
5	-DACK	O	Host data acknowledge. Open drain.
6	HD0	I/O	Host data bus.
7	VDD3	—	Power supply pin. Used in 3.3 V.
8, 9	HD1, HD2	I/O	Host data bus.
10	VSS	—	GND.
11~15	HD3~HD7	I/O	Host data bus.
16	VSS	—	GND.
17	-TEST	I	Test terminal. Normally fixed to High.
18	VSS	—	GND.
19	XTL IN	I	Global clock. 40.5 MHz.
20	XTL OUT	O	Global clock. 40.5 MHz.
21, 22	VDD3	—	Power supply pin. Used in 3.3 V.
23~28	MD0~MD5	I/O	Memory data bus.
29	VDD3	—	Power supply pin. Used in 3.3 V.
30, 31	MD6, MD7	I/O	Memory data bus.
32, 33	-MCE0, -MCE1	O	Chip enable.
34~37	MD8~MD11	I/O	Memory data bus.
38	VSS	—	GND.
39~42	MD12~MD15	I/O	Memory data bus.
43	VDDMAX	—	Power supply pin. Used in 5.0 V.
44	-LCAS	O	Lower digit, column address strobe.
45	-LCASIN	I	Lower digit, data latch enable.
46	VSS	—	GND.
47	-MWE	O	Write enable.
48	-UCAS	O	Higher digit, column address strobe.
49	VDD3	—	Power supply pin. Used in 3.3 V.
50	-UCASIN	I	Higher digit, data latch enable.
51, 52	RAS0, RAS1	O	Lower address strobe.
53~57	MA9~MA5	O	Memory address bus.
58	VSS	—	GND.
59~63	MA4~MA0	O	Memory address bus.
64	RESERVED	—	Reserved.
65	VDD3	—	Power supply pin. Used in 3.3 V.
66~72	VD0~VD6	O	Pixel data bus. RGB or YCbCr format.
73	VSS	—	GND.
74~76	VD7~VD9	O	Pixel data bus. RGB or YCbCr format.
77	VDD3	—	Power supply pin. Used in 3.3 V.

Pin No.	Pin Name	I/O	Description
78~80	VD10~VD12	O	Pixel data bus. RGB or YCbCr format.
81	VDD3	—	Power supply pin. Used in 3.3 V.
82~84	VD13~VD15	O	Pixel data bus. RGB or YCbCr format.
85	VSS	—	GND.
86~89	VD16~VD19	O	Pixel data bus. RGB or YCbCr format.
90	VSS	—	GND.
91~94	VD20~VD23	O	Pixel data bus. RGB or YCbCr format.
95	-VSYNC or CSY	I/O	Vertical sync signal.
96	-HSYNC	I/O	Horizontal sync signal.
97	-VOE	I	Video output enable.
98	VDD3	—	Power supply pin. Used in 3.3 V.
99	VCLK	I/O	Video clock.
100	VSS	—	GND.
101	-RESET	I	Hardware reset.
102	VSS	—	GND.
103	CD-C2PO	I	Data error. Used during CD-ROM data input.
104	CD-LRCK	I	LR clock.
105	CD-DATA	I	Serial data input from CD-DSP.
106	CD-BCK	I	Bit clock from CD decoder.
107	DA-LRCK	O	LR clock.
108	DA-DATA	O	Bit serial audio sample signal.
109	DA-BCK	O	Audio bit clock.
110	VDD3	—	Power supply pin. Used in 3.3 V.
111	DA-XCLK	I	External audio frequency clock.
112	VDD3	—	Power supply pin. Used in 3.3 V.
113	-INT	O	Interrupt request.
114	CDG-S0S1	I	Block start sync.
115	HOST_ENA	I	Host enable.
116	RAM_ENA	I	Boot ROM enable.
117	CDG-VFSY	I	Frame start or composite sync.
118	DAC_EMP	O	Output emphasis flag.
119	CDDA_EMP	I	Input emphasis flag.
120	CDG-SDATA	I	Subcode data.
121	CDG-SCLK	I/O	Subcode data clock.
122	CDDA/VCD	O	Input data identification. H: CDDA. L: video CD.
123	VDDMAX	I	Power supply pin. Used in 5.0 V.
124	FSC1	O	Output generated by dividing-by-4 the pin-126 input CLK.
125	VSS	—	GND.
126	FSC4	I	Frequency divider input.
127, 128	HSEL0, HSEL1	I	Host address bus.



# IC, BU1417AK

Pin No.	Pin Name	I/O	Description
1	BOSD	I	OSD Blue Data input.
2	GD0	I	Green Data Bit 0. (LSB)
3~8	GD1~GD6	I	Green Data Bit 1~6.
9	GND	—	Digital ground.
10	GD7	I	Green Data Bit 7. (MSB)
11	BD0	I	Blue Data Bit 0. (LSB)
12~14	BD1~BD3	I	Blue Data Bit 1~3.
15	OSDSW	I	OSD input enable.
16	CDGSWB	I	Select Video-CD/CD-G.
17~19	BD4~BD6	I	Blue Data Bit 4~6.
20	BD7	I	Blue Data Bit 7. (MSB)
21	GND	—	Digital ground.
22	NTB	I	Select NTSC/PAL mode.
23, 24	IM0, IM1	I	Input mode set Bit 0, 1.
25, 26	TEST1, TEST2	I	Normally pulldown to GND.
27	CVSY	I	C-SYNC or V-SYNC input.
28	HSY	I	H-SYNC input.
29	PIXCLK	O	1/2 Freq. of internal CL.
30	BLKB	I	Data blanking <u>ENABLE</u> .
31	VDD	—	Digital VDD.
32	INT	I	INTERLACE/ <u>NON-INTERLACE</u> .
33	SLABEB	I	Set mode MASTER/ <u>SLABE</u> .
34	ADDH	I	ADD One_line at Non-inter.
35	VREF	I	Reference voltage. (1.29V)
36	CGND	—	Chroma output ground.
37	COUT	O	Chroma output.
38	VGND	—	Composite output ground.
39	VOUT	O	Composite output.
40	AVSS	—	Analog (DAC, VREF) ground.
41	NC	—	Not used.
42	IR	I	Reference resistor. (1.2K)
43	AVDD	—	Analog (DAC, REF) VDD.
44	YGND	—	Luminance output ground.
45	YOUT	O	Luminance output.
46	G4FSC	I	Pulldown to GND.
47	GCLK	I	Video clock input for CD-G.
48	YCOFF	I	DAC (YOUT, COUT) off.
49	YFILON	I	Pulldown to GND.
50	PAL60B	I	<u>PAL60 ON</u> at NTB=HIGH.
51	VCLK	I	Video clock input for VCD.
52	RSTB	I	Logic part initial reset.

Pin No.	Pin Name	I/O	Description
53	CLKSW	I	Divide input CLK ENABLE.
54	RD0	I	Red data Bit 0. (LSB)
55, 56	RD1, RD2	I	Red data Bit 1, 2.
57	ROSD	I	OSD Red data input.
58~60	RD3~RD5	I	Red data Bit 3~5.
61	VDD	—	Digital VDD.
62	RD6, RD7	I	Red data Bit 6, 7.
63	GOSD	I	OSD green data input.

## IC, BU2173AF

Pin No.	Pin Name	I/O	Description
1	VDD	—	Digital VDD.
2	TSTO	O	Open during normal mode. (Used in test mode.)
3	XTALI	I	Reference oscillator input.
4	XTALO	O	Reference oscillator output.
5	CTRLA	I	CD-G/VCD clock selector terminal.
6	CTRLB	I	Fixed to "H" during normal mode.
7	CTRLC	I	CD-G PAL/NTSC clock selector terminal.
8	TSTI	I	Connected to Vss during normal mode. (Used in test mode.)
9	VSS	—	Digital GND.
10	AVSS	—	Analog GND.
11	FOUT3	O	Not used. Open during normal mode.
12	VSSIO	—	I/O GND.
13	FOUT2	O	Clock output (2).
14	TEST	—	Test mode setting. Connected to Vss during normal mode.
15	FOUT1	O	Clock output (1).
16	VDDIO	—	I/O VDD.
17	FOUT4	O	Clock output (4).
18	AVDD	—	Analog VDD.

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• Laser diode turns always ON. (CD block power is ON.)</li> </ul>	<ul style="list-style-type: none"> <li>• FL display check (All displays light.)</li> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes. * NOTE 1</li> </ul>	<b>FOCUS SERVO</b> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read. * NOTE 1</li> </ul>	<b>FOCUS SERVO/TRACKING SERVO</b> <b>CLV SERVO/SLED SERVO</b> Check FOK/FZC
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback</li> <li>Press once; tracking servo OFF</li> <li>Press twice; tracking servo ON</li> <li>* NOTE 2</li> </ul>	<b>TRACKING SERVO ON/OFF</b> Tracking balance (traverse) adjustment
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> <li>* NOTE 3</li> <li>(During playback, machine operates normally.)</li> </ul>	<b>SLED SERVO</b> Check SLED mechanism operation

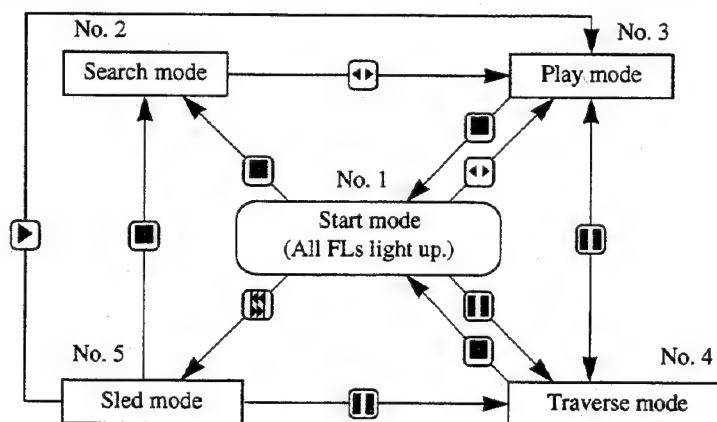
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

### 4. Operation Outline

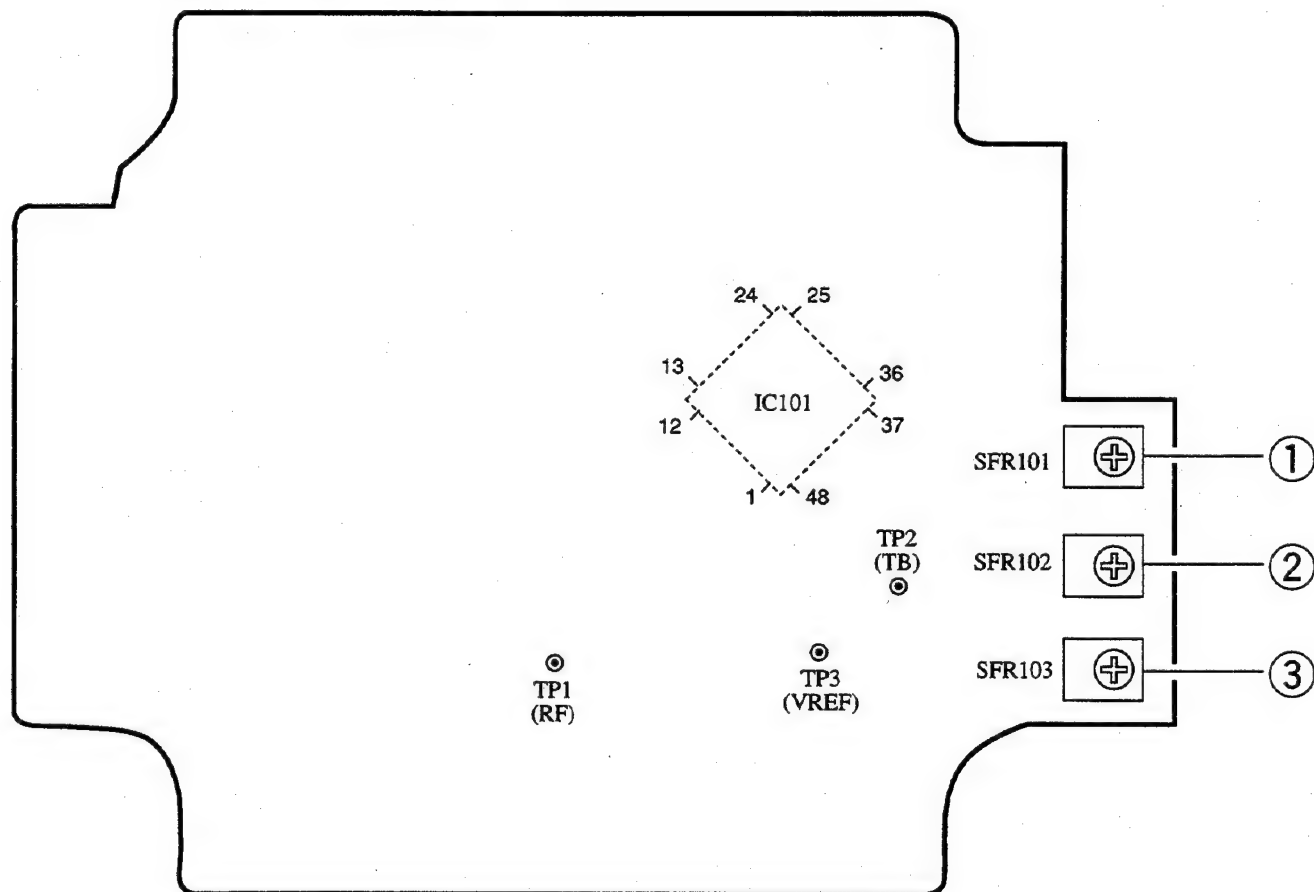
The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

## ELECTRICAL ADJUSTMENT

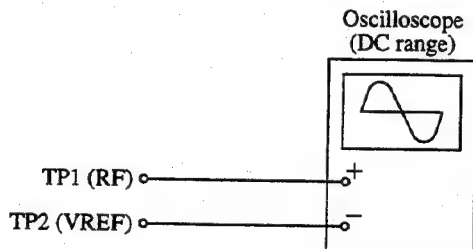
### **B** CD MECHA C.B



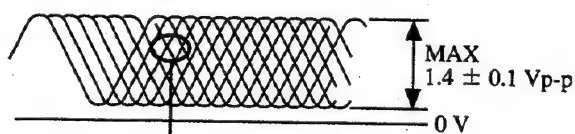
Note: Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.

### 1. Focus Bias Adjustment

Make the focus bias adjustment when replacing and repairing the optical block.



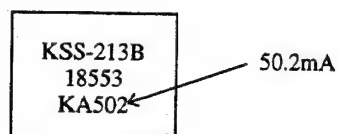
- 1) Connect an oscilloscope to test points TP1 (RF) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 4) Adjust SFR101 so that RF signal of test point TP1 (RF) is MAX and CLEARREST.



EYE PATTERN must be CLEAR and MAX

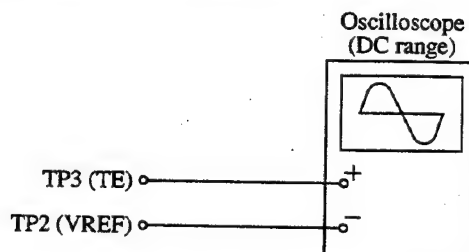
VOLT/DIV : 50mV  
TIME/DIV : 0.5μS

Note: The current of the laser signal can be checked with the voltages on both sides of R127 (10Ω). The difference for the specified value shown on the level must be within ± 6.0mA.

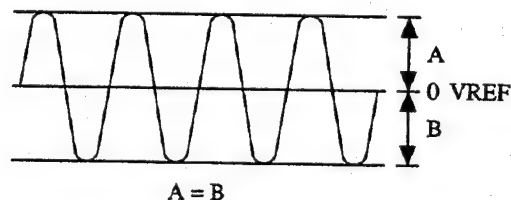


$$\text{Laser current } I_{op} = \frac{\text{Voltage across R127}}{10\Omega}$$

### 2. Tracking Balance Adjustment



- 1) Connect an oscilloscope to test points TP3 (TE) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and press the PLAY button.
- 4) Adjust SFR103 to decrease the tracking gain.
- 5) Adjust SFR102 so that the waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
- 6) After the adjustment is completed, remove the connected lead wires from the terminals.



VOLT/DIV : 20mV  
TIME/DIV : 1mS

### 3. Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly. However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when 2-axis device operates. However, as these reciprocate, the adjustment is at the point where both are satisfied.



- When gain is raised, the noise increases when the 2-axis device operates.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

When the gain adjustment is off, the symptoms below appear.

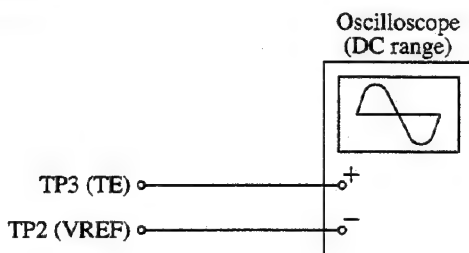
Symptoms \ Gain	(Focus)	Tracking
● The time until music starts becomes longer for STOP → ▶ PLAY or automatic selection (◀◀, ▶▶ buttons pressed.) (Normally takes about 2 seconds.)	low	low or high
● Music does not start and disc continues to rotate for STOP → ▶ PLAY or automatic selection (◀◀, ▶▶ buttons pressed.)	—	low
● Disc stops to rotate shortly after STOP → ▶ PLAY.	low or high	—
● Sound is interrupted during PLAY. Or time counter display stops.	—	low
● More noises during the 2-axis device operation.	high	high

The following is simple adjustment method.

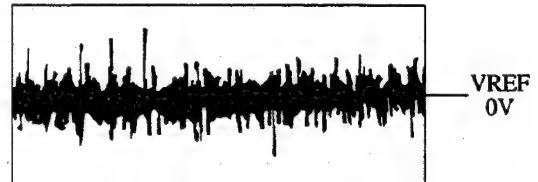
#### — Simple adjustment —

Note: Since the exact adjustment cannot be performed, remember the positions of the controls before the performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure:



- 1) Keep the set horizontal. (If the set is not kept horizontally, this adjustment cannot be performed due to the gravity against the 2-axis device.)
- 2) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 3) Connect an oscilloscope to TP3 (TE), TP2 (VREF) of the CD MECHA C.B.
- 4) Adjust SFR103 so that the waveform appears as shown in the figure below. (tracking gain adjustment)

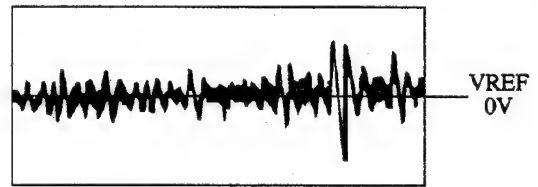


VOLT/DIV: 50 mV  
TIME/DIV: 1mS

#### ● Incorrect example

##### Low tracking gain

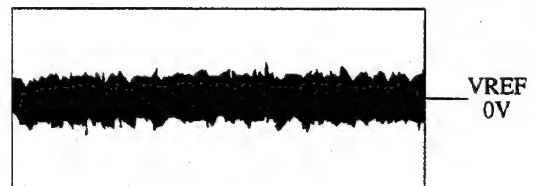
The fundamental wave appears as compared with the waveform adjusted.



VOLT/DIV: 50 mV  
TIME/DIV: 1mS

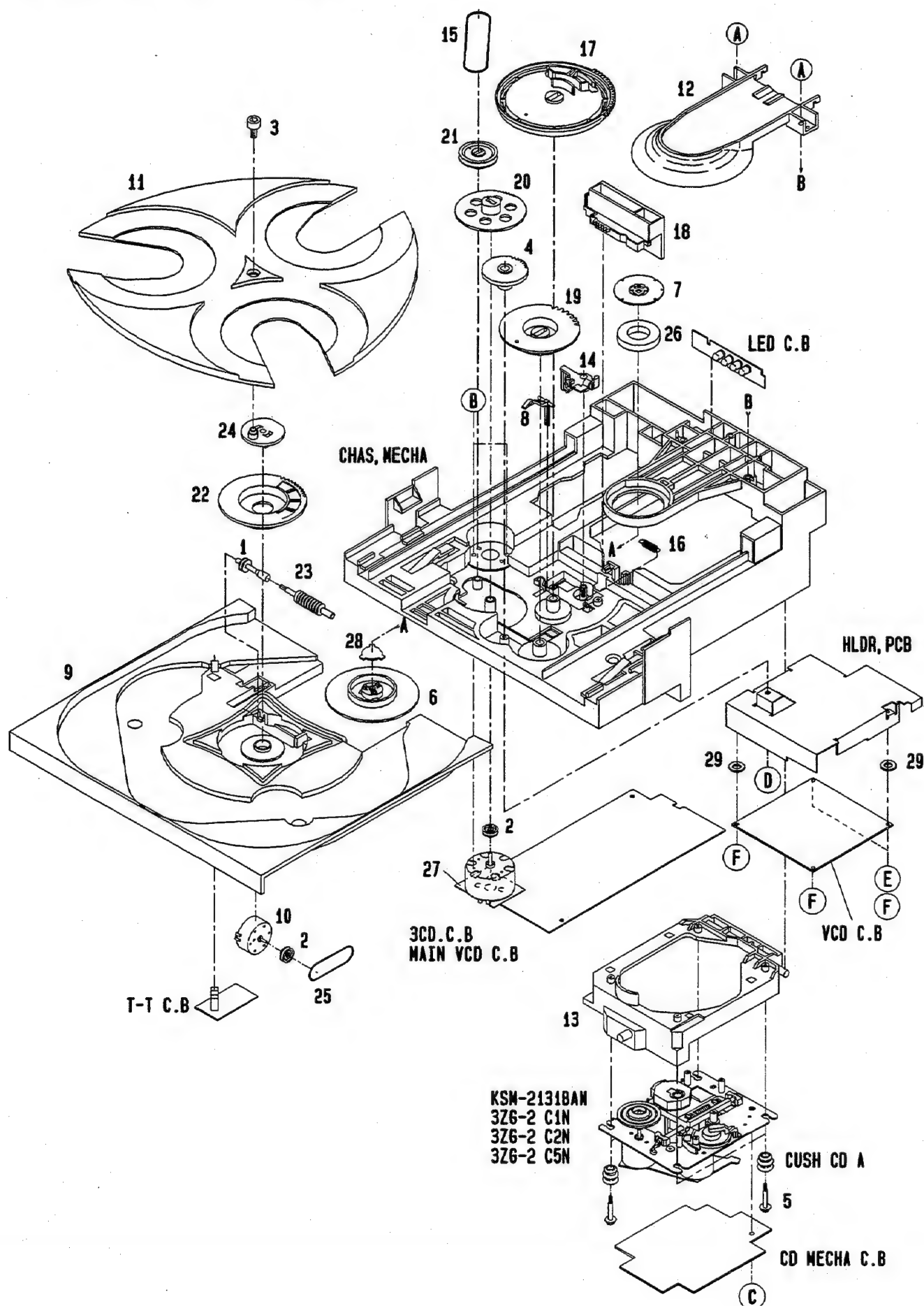
##### High tracking gain

The frequency of the fundamental wave is higher than that in low gain.



VOLT/DIV: 50 mV  
TIME/DIV: 1mS

# MECHANICAL EXPLODED VIEW 1 / 1

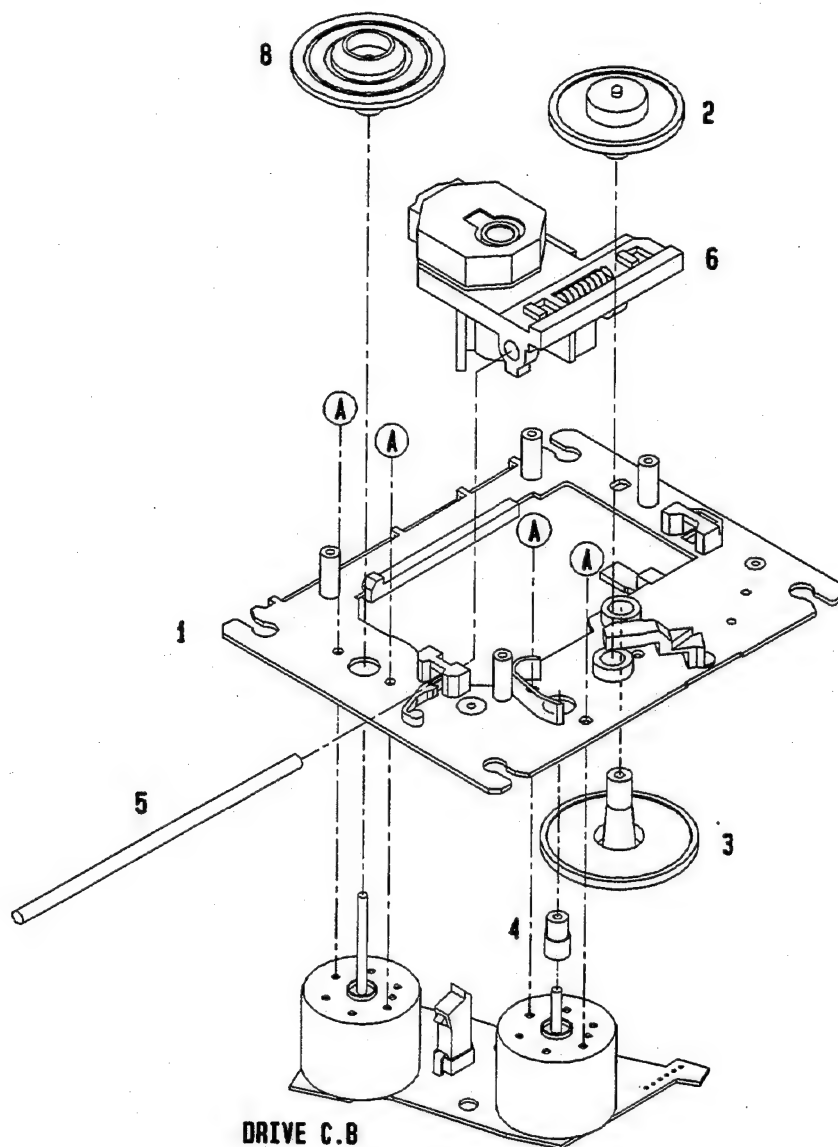


# MECHANICAL PARTS LIST 1 / 1

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	84-ZG1-239-11K		PULLY, WORM N	20	84-ZG1-206-119		GEAR, RELAY
2	81-ZG1-212-01K		PULLY, LOAD MO	21	84-ZG1-219-019		PULLY, RELAY BGE
3	81-ZG1-239-019		S-SCREW, TT	22	84-ZG1-221-019		GEAR, MAIN TT
4	81-ZG1-291-019		GEAR, TRAY RELAY NO3	23	84-ZG1-238-01K		GEAR, WORM N
5	81-ZG1-271-019		S-SCREW, MECH REAR	24	84-ZG1-224-019		LEVER, TT
6	81-ZG1-277-219		HLDR, MAGNET N	25	84-ZG1-225-010		BELT, SQ1.0-63.3
7	81-ZG1-255-119		PLATE, MAGNET MK2	26	87-036-326-010		MAGNET, CLAMPER 93<A, B, Z, WR, V5>
8	83-ZG3-213-019		LVR, SW	26	83-ZG3-602-010		RING, MAG<V3L, V4L>
9	84-ZG1-003-219		TRAY, NO2-B	27	80-CD3-214-019		CUSH CD A
10	87-045-364-019		MOTOR, (BCH3B14)	28	84-ZG1-248-019		SPR-C, WORM
11	84-ZG1-005-119		TURNTABLE, NO1	29	82-DW1-220-019		SPACER, DIA 3.6-8-0.24<V3L>
12	84-ZG1-010-019		IND, CD N<V3L, V4L>	A	87-067-703-019		BVT2+3-10 (W/O SLOT)<EXCEPT WR>
12	84-ZG1-011-019		REFLECTOR, CD<A, B, Z, V5>	B	87-251-070-419		U+2.6-3<Z>
13	84-ZG1-212-119		HLDR, MECHA NO2	C	87-342-036-219		UT2+2-8<V3L, V4L, V5>
14	84-ZG1-208-019		LEVER, CAM	D	87-067-579-019		BVT 2+3-8 W/O SLOT<V3L, V4L>
15	84-ZG1-209-010		BELT, SQ1.8-117.7	E	81-557-598-010		UTT+2-5 C-TITE<V4L>
16	84-ZG1-211-019		SPR-E CAM S	F	87-067-767-019		BVTT+2.6-6<V3L>
17	84-ZG1-215-219		GEAR, MAIN CAM BLU	G	87-067-058-019		FW, 3.2-8-0.5<V4L>
18	84-ZG1-216-219		SLIDE, MECHA CAM YEL				
19	84-ZG1-205-119		GEAR, TRAY				

# CD MECHANISM EXPLODED VIEW 1 / 1 (3ZG-2 C5N <WR>)

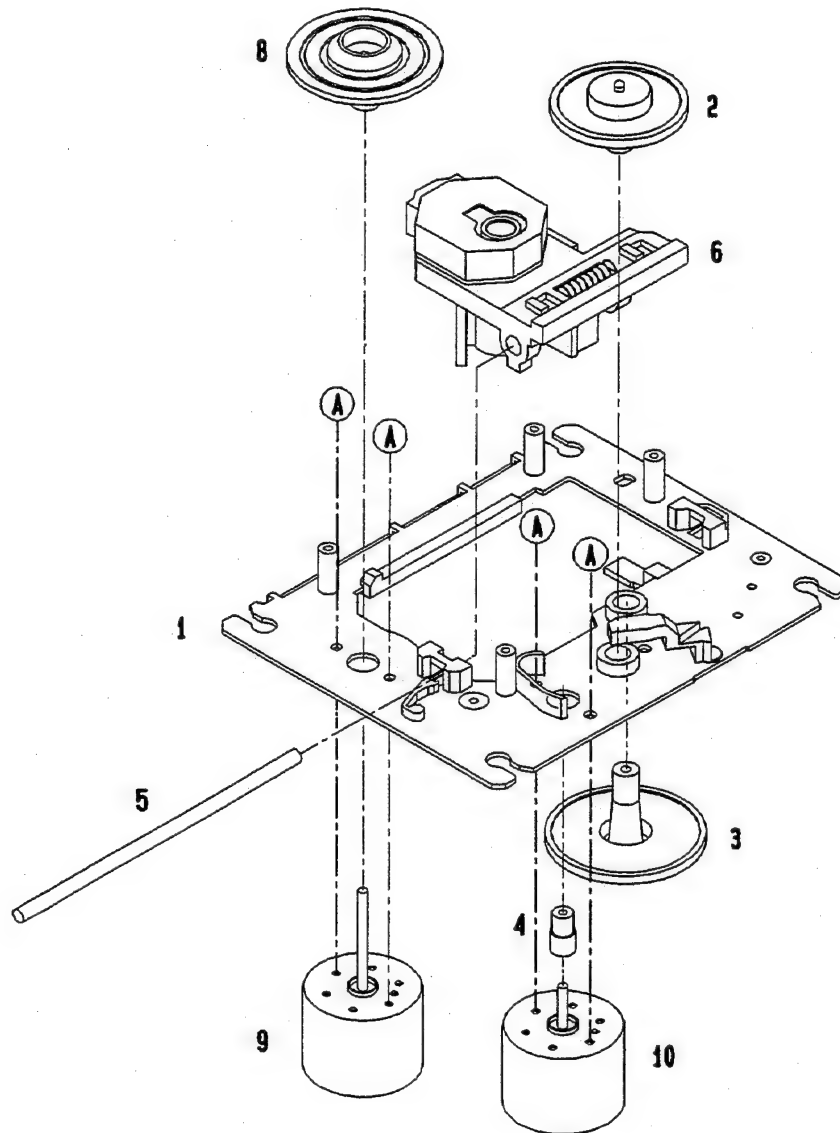


## CD MECHANISM PARTS LIST 1 / 1 (3ZG-2 C5N <WR>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	83-ZG2-202-71K		O-SERT S ASSY, S	6	87-070-445-010		PICK-UP, KSS-213B
2	83-ZG2-204-419		GEAR, A	8	83-ZG2-227-01K		TURN TABLE, C1
3	83-ZG2-205-219		GEAR, B	A	87-261-032-219		SCREW V+2-3
4	83-ZG2-220-01K		GEAR MOTOR 2				
5	83-ZG2-207-119		SHAFT, SLIDE				

# CD MECHANISM EXPLODED VIEW 1 / 1 (3ZG-2 C1N <V3L/V4L/V5>)



## CD MECHANISM PARTS LIST 1 / 1 (3ZG-2 C1N <V3L/V4L/V5>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	83-ZG2-202-71K		O-SERT S ASSY, S	6	87-070-445-010		PICK-UP, KSS-213B
2	83-ZG2-204-419		GEAR, A	8	83-ZG2-233-019		TURN TABLE, A5
3	83-ZG2-205-219		GEAR, B	9	87-045-358-019		MOT, RF-310T A 43
4	83-ZG2-220-01K		GEAR MOTOR 2	10	87-045-356-019		MOT, RF-310T A 30
5	83-ZG2-207-119		SHAFT, SLIDE	A	87-261-032-219		SCREW V+2-3



# 4ZG-1A

## ELECTRICAL MAIN PARTS LIST

DESCRIPTION で判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

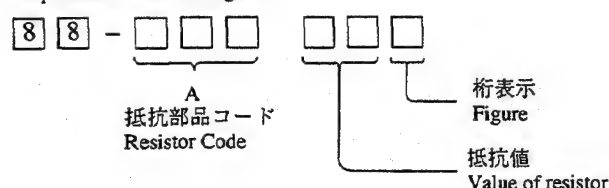
REF.NO.	PART NO.	カンリ NO.	DESCRIPTION	REF.NO.	PART NO.	カンリ NO.	DESCRIPTION
IC				C170	87-010-263-089		CAP,E 100-10 SME 5X11
	87-070-294-019	IC,CXD2508AQ		C171	87-010-178-089		C-CAP,S 1000P-50 B
	87-017-745-019	IC,CXA1782BQ		C172	87-010-198-089		C-CAP,S 0.022-25 B
	87-017-888-089	IC,NJM4558MD		C173	87-010-196-089		C-CAP,S 0.1-25 F
	87-070-305-019	IC,BA6897S		C174	87-010-197-089		C-CAP,S 0.01-25 B
	87-001-982-019	IC,TA7291S		C175	87-010-263-089		CAP,E 100-10 SME 5X11
	87-017-802-010	IC,LC7872E<G>		C176	87-010-248-089		CAP,E 220-10 SME
	87-017-803-010	IC,LC32464P-80<G>		C177	87-010-197-089		C-CAP,S 0.01-25 B
				C178	87-010-260-089		CAP,E 47-25 SME
				C179	87-010-196-089		C-CAP,S 0.1-25 F
TRANSISTOR				C180	87-010-196-089		C-CAP,S 0.1-25 F
	87-026-239-089	C-TR,DTC114TK		C201	87-010-318-089		C-CAP,S 47P-50 CH
	89-110-373-089	C-TR,2SA1037 S		C202	87-010-318-089		C-CAP,S 47P-50 CH
	89-420-052-089	TR,2SD2005Q (T105)		C203	87-010-321-089		C-CAP,S 82P-50 CH
	89-421-722-389	TR,2SD2172 V/W		C204	87-010-321-089		G-CAP,S 82P-50 CH
	89-320-011-089	TR,2SC2001K		C205	87-010-321-089		C-CAP,S 82P-50 CH
	87-026-223-089	C-TR,DTC143TK		C206	87-010-321-089		C-CAP,S 82P-50 CH
	89-113-187-089	TR,2SA1318TU		C207	87-012-153-089		C-CAP,S 120P-50 CH
	87-026-608-089	C-TR,DTC 123 JK		C208	87-012-153-089		C-CAP,S 120P-50 CH
	89-406-555-089	TR,2SD655E<G>		C209	87-012-153-089		C-CAP,S 120P-50 CH
	87-A30-039-040	C-TR,2SD1383K<D>		C210	87-012-153-089		C-CAP,S 120P-50 CH
DIODE				C211	87-010-405-049		CAP,E 10-50 SME
	87-020-465-089	DIODE,1SS133		C212	87-010-405-049		CAP,E 10-50 SME
	87-020-330-089	C-DIODE,DAP202K		C213	87-010-186-089		C-CAP,S 4700P-50 B
				C214	87-010-186-089		C-CAP,S 4700P-50 B
3CD C.B				C231	87-010-112-089		CAP,E 100-16 11L
C101	87-010-194-089	C-CAP,S 0.047-25 F		C232	87-010-060-049		CAP,E 100-16 7L
C102	87-010-180-089	C-CAP,S 1500P-50 B		C301	87-010-196-089		C-CAP,S 0.1-25 F
C103	87-018-134-089	CAP,TC-U 0.01-16 Y		C302	87-010-260-089		CAP,E 47-25 SME
C104	87-012-156-089	C-CAP,S 220P-50 CH		C501	87-010-221-049		CAP,E 470-10 SME
C105	87-015-698-049	CAP,E 4.7-50 7L		C502	87-010-197-089		C-CAP,S 0.01-25 B
C106	87-010-060-049	CAP,E 100-16 7L		C503	87-010-263-089		CAP,E 100-10 SME 5X11
C107	87-010-197-089	C-CAP,S 0.01-25 B		C504	87-010-196-089		C-CAP,S 0.1-25 F
C108	87-016-461-089	C-CAP,S 0.47-16 F		C505	87-010-196-089		C-CAP,S 0.1-25 F
C109	87-010-197-089	C-CAP,S 0.01-25 B		C506	87-010-196-089		C-CAP,S 0.1-25 F
C115	87-010-318-089	C-CAP,S 47P-50 CH		C507	87-010-196-089		C-CAP,S 0.1-25 F
C116	87-010-318-089	C-CAP,S 47P-50 CH		C508	87-010-221-049		CAP,E 470-10 SME
C117	87-010-197-089	C-CAP,S 0.01-25 B		C509	87-010-196-089		C-CAP,S 0.1-25 F
C118	87-010-260-089	CAP,E 47-25 SME		C510	87-010-196-089		C-CAP,S 0.1-25 F
C119	87-018-134-089	CAP,TC-U 0.01-16 Y<EXCEPT G>		C511	87-010-185-089		C-CAP,S 3900P-50 B
C120	87-018-209-080	CAP,TC-U 0.1-50 F		C601	87-010-197-089		C-CAP,S 0.01-25 B
C121	87-018-134-089	CAP,TC-U 0.01-16 Y		C602	87-010-381-089		CAP,E 330-16 SME
C151	87-010-182-089	C-CAP,S 2200P-50 B		C603	87-010-196-089		C-CAP,S 0.1-25 F
C152	87-010-196-089	C-CAP,S 0.1-25 F		C604	87-010-137-080		CAP,E,22-16 BP
C153	87-010-196-089	C-CAP,S 0.1-25 F		C701	87-010-322-089		C-CAP,S 100P-50 CH
C154	87-010-196-089	C-CAP,S 0.1-25 F		C702	87-010-322-089		C-CAP,S 100P-50 CH
C155	87-010-404-089	CAP,E 4.7-50 SME		C703	87-010-318-089		C-CAP,S 47P-50 CH
C156	87-010-193-089	C-CAP,S 0.033-25 F		C704	87-010-178-089		C-CAP,S 1000P-50 B
C157	87-010-197-089	C-CAP,S 0.01-25 B		C705	87-010-178-089		C-CAP,S 1000P-50 B
C158	87-010-401-089	CAP,E 1-50 SME		C712	87-010-982-049		CAP,E 33-25 GAS
C159	87-010-382-089	CAP,E 22-25 SME		C801	87-010-197-089		C-CAP,S 0.01-25 B<G>
C160	87-010-213-089	C-CAP,S 0.015-25 B		C802	87-010-260-089		CAP,E 47-25 SME<G>
C161	87-018-134-089	CAP,TC-U 0.01-16 Y		C803	87-010-194-089		C-CAP,S 0.047-25 F<G>
C162	87-010-263-089	CAP,E 100-10 SME 5X11		C804	87-010-260-089		CAP,E 47-25 SME<G>
C163	87-010-197-089	C-CAP,S 0.01-25 B		C805	87-018-134-089		CAP,TC-U 0.01-16 Y<G>
C164	87-010-193-089	C-CAP,S 0.033-25 F		C806	87-010-260-089		CAP,E 47-25 SME<G>
C165	87-010-197-089	C-CAP,S 0.01-25 B		C807	87-010-405-089		CAP,E 10-50 SME<G>
C166	87-010-193-089	C-CAP,S 0.033-25 F		C808	87-010-197-089		C-CAP,S 0.01-25 B<G>
C167	87-010-197-089	C-CAP,S 0.01-25 B		C809	87-010-405-049		CAP,E 10-50 SME<G>
C169	87-010-150-089	C-CAP,S 6P-50 CH		C810	87-010-313-089		C-CAP,S 18P-50 CH<G>
				C811	87-010-314-089		C-CAP,S 22P-50 CH<G>
				C812	87-010-313-089		C-CAP,S 18P-50 CH<G>
				C813	87-010-315-089		C-CAP,S 27P-50 CH<G>

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C814	87-010-197-089		C-CAP,S 0.01-25 B<G>	SW701	87-036-109-019		SW,PUSH SPFB 61
C815	87-010-260-049		CAP,E 47-25 SME<G>	SW702	87-036-109-019		SW,PUSH SPFB 61
C816	87-010-404-089		CAP,E 4.7-50 SME<G>	X101	87-030-402-089		VIB,XTAL 16.9344 MHZ
C817	87-010-221-089		CAP,E 470-10<G>	X801	80-JUC-602-089		VIB,XTAL 17.73MHZ<G>
C818	87-010-196-089		C-CAP,S 0.1-25 F<G>	X802	80-JUC-601-089		VIB,XTAL 14.31MHZ<G>
C819	87-010-321-089		C-CAP,S 82P-50 CH<G>				
C820	87-010-178-089		C-CAP,S 1000P-50 B<G>	LED C.B			
C821	87-010-196-089		C-CAP,S 0.1-25 F<G>	LED701	87-070-200-089		LED,SLP636C-81-S-T1
C822	87-010-197-089		C-CAP,S 0.01-25 B<G>	LED702	87-017-350-080		LED,SEL1550CM
C901	87-010-260-089		CAP,E 47-25 SME<D>	LED703	87-017-350-080		LED,SEL1550CM
C902	87-010-196-089		C-CAP,S 0.1-25 F<D>	LED704	87-070-200-089		LED,SLP636C-81-S-T1
CON2	84-2G1-616-019		CONN ASSY, 6P H				
EMI801	87-008-474-089		F-BEAD,EMI BL02RNI<G>	T-T C.B			
EMI802	87-008-474-089		F-BEAD,EMI BL02RNI<G>	C401	87-018-214-089		CAP TC U 0.1-50 F
FC1	85-NFT-611-119		FF-CABLE,16P-1.0	M401	87-045-364-019		MOTOR, (ECH3B14)
FC4	84-2G1-614-219		CABLE,FFC 5P-1.25	PS401	87-026-573-019		P-SNSR,GPI553V
J801	87-009-502-010		JACK,PIN 1PY EARTH<G>				
LED901	87-A40-123-019		LED,SLZ-8128A-01-B<D>	MOTOR C.B			
M601	87-045-305-019		MOTOR, RF-500TB	M2	9X-262-513-210		SLED MOTOR ASSY
R177	87-022-365-089		C-RES,S 100K-1/10W F	PIN3	91-564-722-110		CONNECTOR 6P
R178	87-022-363-089		C-RES,S 68K-1/10W F	SW1	91-572-085-110		LEAF SW
R179	87-022-363-089		C-RES,S 68K-1/10W F				
R180	87-022-363-089		C-RES,S 68K-1/10W F				
R181	87-022-363-089		C-RES,S 68K-1/10W F				
R182	87-022-365-089		C-RES,S 100K-1/10W F				
R401	87-022-186-089		C-RES,82-1/4W J				
R403	87-022-186-089		C-RES,82-1/4W J				
SFR151	87-024-175-089		SFR,47K DIA6 V				
SFR152	87-024-176-089		SFR,100K DIA6 V				
SFR153	87-024-176-089		SFR,100K DIA6 V				


# ○ チップ抵抗部品コード / CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

Chip Resistor Part Coding



チップ抵抗  
Chip resistor

Chip Resistor				寸法／Dimensions (mm)				抵抗コード : A
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	外形／Form	L	W	t	Resistor Code: A
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

Refer to the following pages for the 4ZG-1 and the common sections.

## ■ IC DESCRIPTION

CXA1782BQ ..... See page 64

LC7872E ..... See page 62

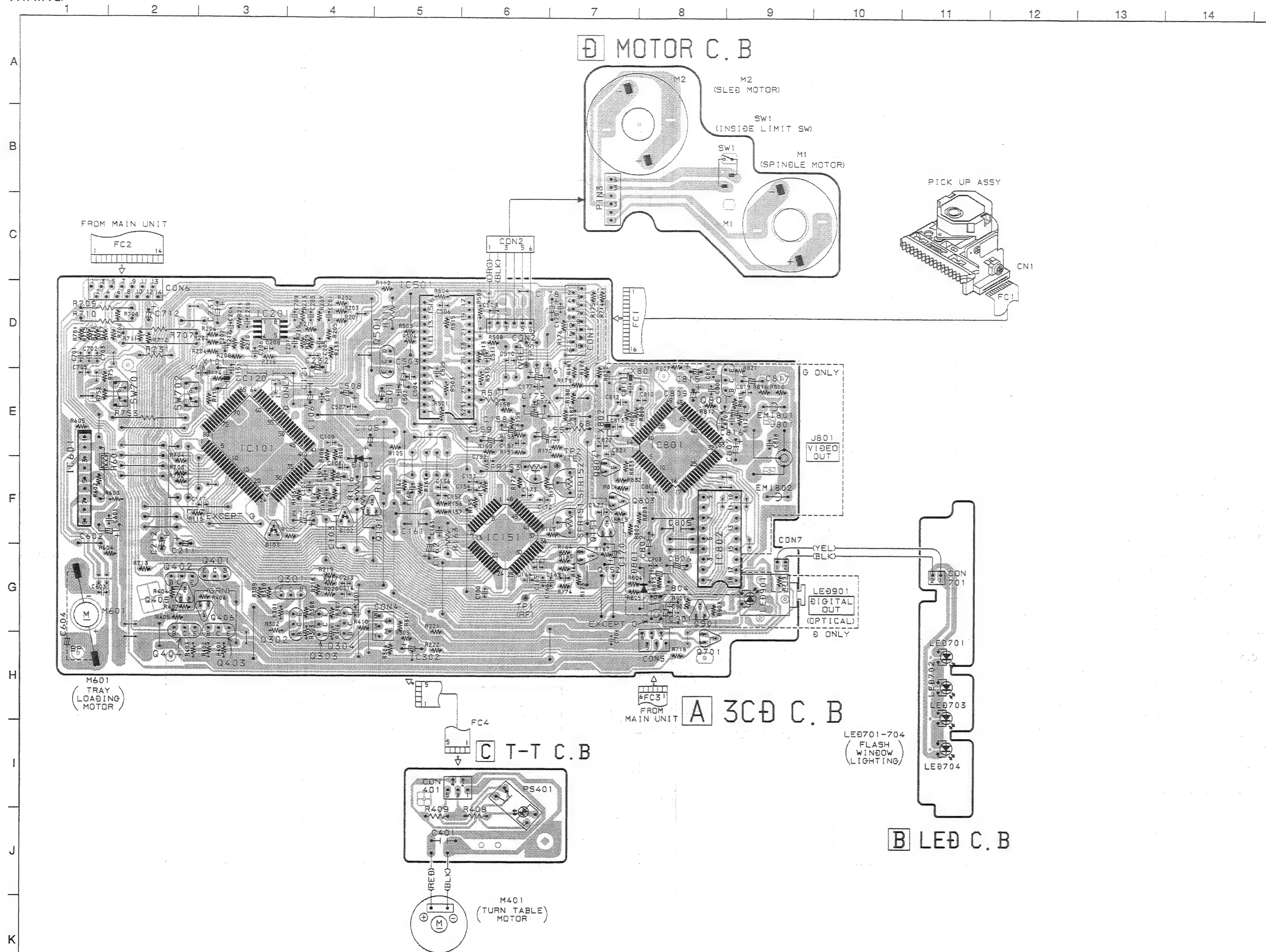
## ■ MECHANICAL EXPLODED VIEW 1 / 1

See page 95

## ■ MECHANICAL PARTS LIST 1 / 1

See page 96





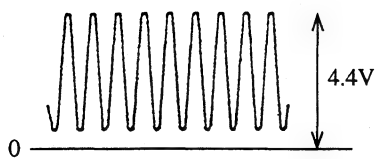




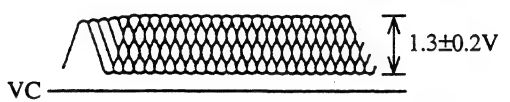


WAVE FORM

① SYSTEM CLOCK  
IC101 Pin ④ (XTAO)  
f=16.9344MHz  
VOLT/DIV: 2V  
TIME/DIV: 0.1μS



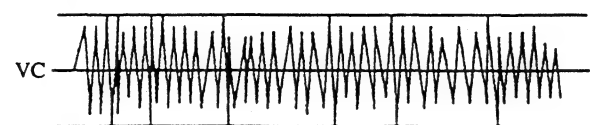
② RF  
TP1 (RF)  
VOLT/DIV: 500mV  
TIME/DIV: 0.5μS



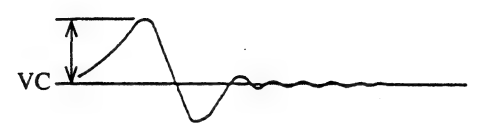
③ Focus  
IC151 Pin ⑥ (FE-O)  
VOLT/DIV: 200mV  
TIME/DIV: 2mS



④ Tracking  
TP2 (TE)  
TIME/DIV: 1mS

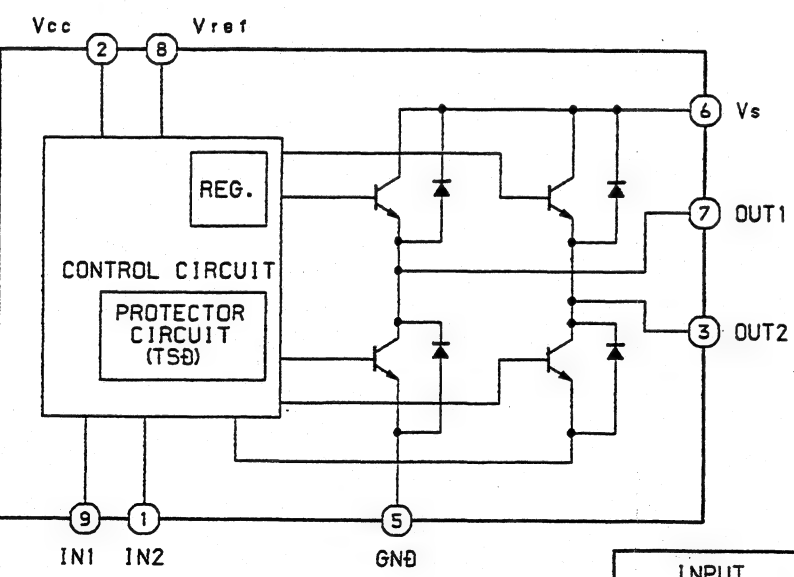


⑤ Focus Search  
IC151 Pin ⑥ (FE-O)



IC BLOCK DIAGRAM

IC, TA7291



INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW
0	1	L	H	CCW
1	1	L	L	BRAKE

∞ : HI IMPEDANCE  
NOTE : INPUT "H" ACTIVE

IC DESCRIPTION

IC, CXD2508AQ

Pin No.	Pin name	I/O	Description
1	SCOR	O	1H when the subcode sync S0 or S1 is detected.
2	SBSO	O	SUBP~W serial output.
3	EXCK	I	Clock input for SBSO read out.
4	SQSO	O	SUBQ 80-bit serial output.
5	SQCK	I	Clock input for SQSO read out.
6	MUTE	I	H to mute. L to cancel.
7	SENS	O	SENS signal output to CPU.
8	XRST	I	System reset. L to reset.
9	DATA	I	Serial data input from CPU .
10	XLAT	I	Latch input from CPU. Latching serial data at fall down.
11	CLOK	I	Clock input from CPU to transfer serial data.
12	VSS	—	GND.
13	SEIN	I	SENS input from SSP.
14	CNIN	I	Numbers of track jump are counted and input.
15	DATO	O	Serial data output to SSP.
16	XLTO	O	Serial data latched output to SSP. Latched at fall down edge.
17	CLKO	O	Clock input from SSP to transfer serial data.
18, 20	SPOA, C	I	Microprocessor expansion interface.
19	XTSL	I	X'tal selection input terminal. "L" at 16.9344MHz X'tal. "H" at 33.86888MHz.
22	XLON	O	Microprocessor expansion interface.
23	FOK	I	Focus OK input pin. Used for SENS output and servo auto sequencer.
24	MON	O	Spindle motor ON/OFF control output.
25	MDP	O	Spindle motor servo control output.
26	MDS	O	Spindle motor servo control output.
27	LOCK	O	GFS is sampled by 460Hz. H output when GFS is H. L output when GFS is L for 8 consecutive times.
28	TEST1	I	TEST. (Connected to GND)
29	FILO	O	Filter output to master PLL. (slave=digital PLL)
30	FILI	I	Filter input to master PLL.
31	PCO	O	Charge-pump output to master PLL.
32	VDD	—	Power supply input. (+5V)
33	AVSS1	—	GND.
34	CLTV	I	VCO control voltage input to master PLL.
35	AVDD1	—	Power supply input. (+5V)
36	RF	I	EFM signal input.
37	BIAS	I	Constant current input to asymmetry correction circuit.
38	ASYI	I	Compare voltage input to asymmetry correction circuit.
39	ASYO	O	EFM full swing output. (L=VSS, H=VDD)
40	ASYE	I	L: asymmetry correction OFF. H: asymmetry correction ON
41	WDCK	O	D/A interface, word clock (2Fs) for 48-bit slot.
42	LRCK	O	D/A interface, LR clock (Fs) for 48-bit slot.

Pin No.	Pin name	I/O	Description
43	LRCKI	I	LR clock input to DAC. (48-bit slot)
44	PCMD	O	D/A interface, serial data. (2's complement, MSB first)
45	PCMDI	I	Audio data input to DAC. (48-bit slot)
46	BCK	O	D/A interface, bit clock.
47	BCKI	I	Bit clock input to DAC. (48-bit slot)
48	GTOP	O	GTOP output.
49	XUGF	O	XUGF output.
50	XPCK	O	XPLCK output.
51	GFS	O	GFS output.
52	RFCK	O	RFCK output.
53	VSS	—	GND.
54	C2PO	O	C2PO output.
55	XROF	O	XRAOF output.
56	MNT3	O	MNT3 output.
57	MNT1	O	MNT1 output.
58	MNT0	O	MNT0 output.
59	FSTT	O	Pins-73 and -74 divided-by 2/3 output.
60	C4M	O	4.2336MHz output.
61	DOUT	O	Digital Out connector output signal.
62	EMPH	O	H when the playback disc has emphasis. L when it does not.
63	EMPHI	I	DAC emphasis ON/OFF. H when ON. L when OFF
64	WFCK	O	WFCK (WRITE FRAME CLOCK) output.
65	ZEROL	O	No sound data detection output. H (L-ch) when no sound data is detected.
66	ZEROR	O	No sound data detection output. H (R-ch) when no sound data is detected.
67	DTSI	I	TEST for DAC. (Normally "L")
68	VDD	—	Power supply input. (+5V)
69	NLPWM	O	L-ch PWM output. (reversed polarity)
70	LPWM	O	L-ch PWM output. (normal polarity)
71	AVDD2	—	Power supply input to L-ch PWM driver. (Connected to +5V)
72	AVDD3	—	Power supply input to X'tal. (Connected to +5V)
73	XTAI	I	X'tal input to 33.8688MHz oscillator circuit.
74	XTAO	O	33.8688MHz X'tal oscillator circuit output.
75	AVSS1	—	GND input to X'tal. (Connected GND)
76	AVSS2	—	GND input to PWM driver. (Connected to GND)
77	NRPWM	O	R-ch PWM output. (reversed phase)
78	RPWM	O	R-ch PWM output. (normal phase)
79	DTS2	I	TEST-2 for DAC. (Normally "L")
80	DTS3	I	TEST-3 for DAC. (Normally "L")

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button. (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• Laser diode turns always ON. (CD block power is ON.)</li> </ul>	<ul style="list-style-type: none"> <li>• FL display check (All displays light.)</li> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes. * NOTE 1</li> </ul>	<b>FOCUS SERVO</b> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read. * NOTE 1</li> </ul>	<b>FOCUS SERVO/TRACKING SERVO</b> <b>CLV SERVO/SLED SERVO</b> Check FOK/FZC
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON * NOTE 2</li> </ul>	<b>TRACKING SERVO ON/OFF</b> Tracking balance (traverse) adjustment
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track * NOTE 3</li> </ul> (During playback, machine operates normally.)	<b>SLED SERVO</b> Check SLED mechanism operation

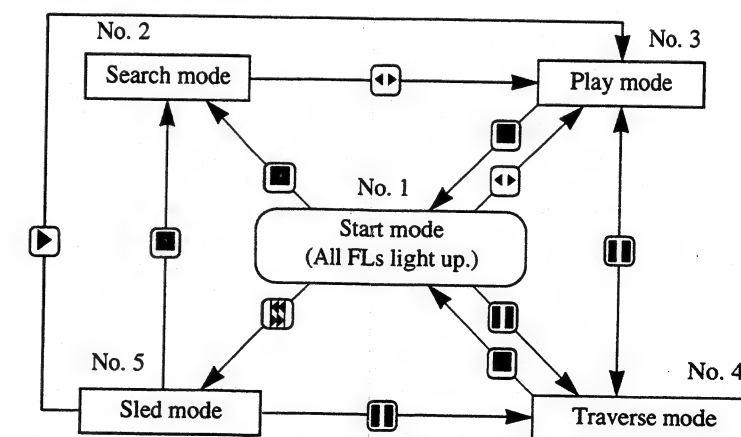
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

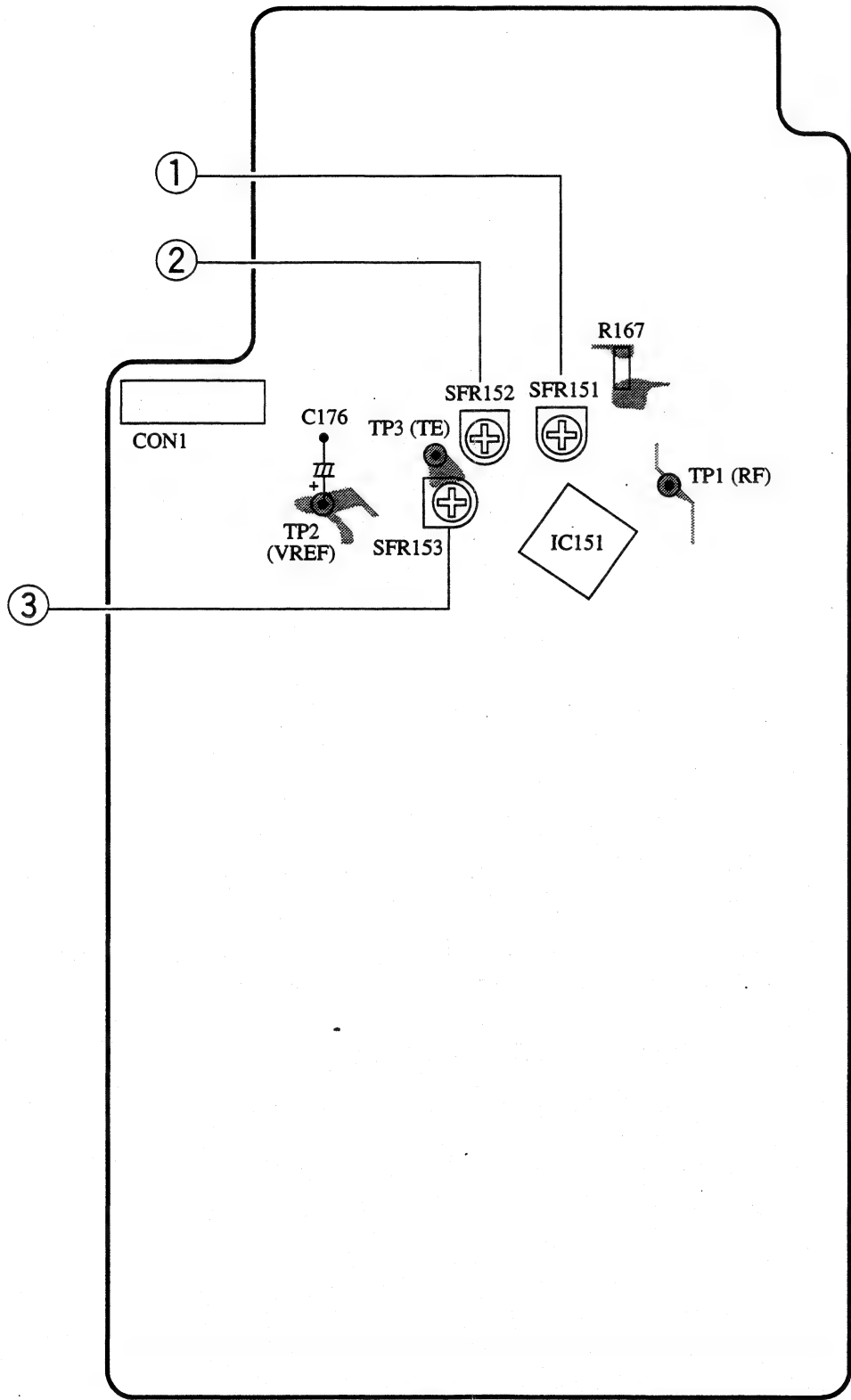
### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

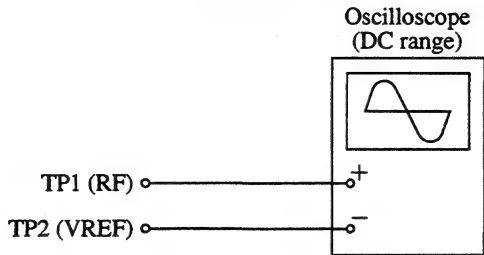
**A** 3CD C.B (PATTERN SIDE)



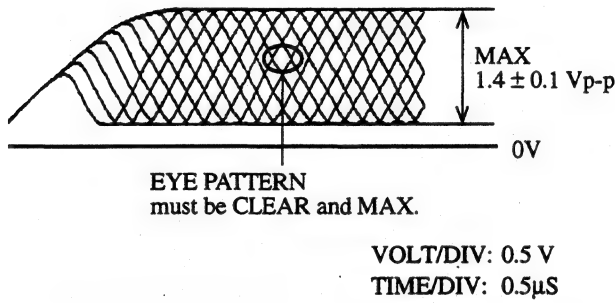
**Note:**

- Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.
- During adjustment, connect (⊖) pin of an oscilloscope to TP2 (VREF).

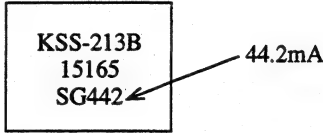
**1. Focus Bias Adjustment**  
Make the focus bias adjustment when replacing and repairing the optical block.



- 1) Connect an oscilloscope to test points TP1 (RF) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 4) Adjust SFR151 so that RF signal of test point TP1 (RF) is MAX and CLEARREST.

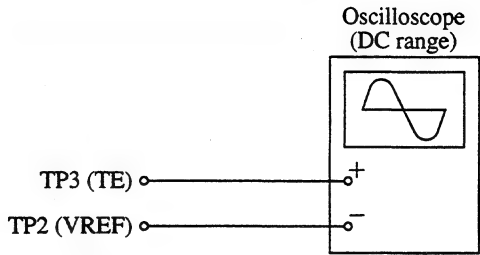


**Note:** The current of the laser signal can be checked with the voltages on both sides of R167 (10Ω). The difference for the specified value shown on the label must be within±6.0mA.

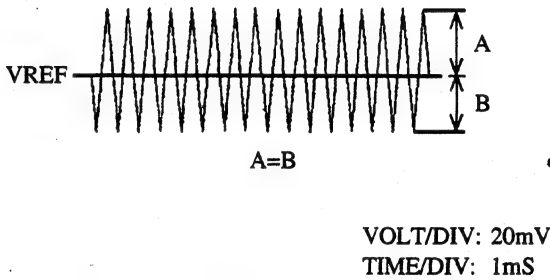


Laser current Iop =  $\frac{\text{Voltage across R167}}{10\Omega}$

**2. Tracking Balance Adjustment**



- 1) Connect an oscilloscope to test points TP3 (TE) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and press the PLAY button.
- 4) Adjust SFR153 to reduce the tracking gain.
- 5) Adjust SFR152 so that the traverse waveform on an oscilloscope is vertically symmetrical as shown in the figure below.



**3. Tracking Gain Adjustment**

A servo analyzer is necessary in order to perform this adjustment exactly. However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when 2-axis device operates. However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise increases when the 2-axis device operates.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

When the gain adjustment is off, the symptoms below appear.

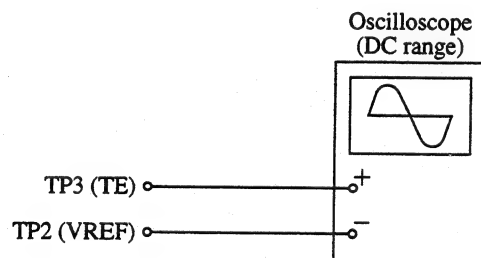
Symptoms	Gain	(Focus)	Tracking
● The time until music starts becomes longer for STOP→▶PLAY or automatic selection (◀▶ buttons pressed.) (Normally takes about 2 seconds.)		low	low or high
● Music does not start and disc continues to rotate for STOP→▶PLAY or automatic selection (◀▶ buttons pressed.)		—	low
● Disc stops to rotate shortly after STOP→▶PLAY.		low or high	—
● Sound is interrupted during PLAY. Or time counter display stops.		—	low
● More noises during the 2-axis device operation.		high	high

The following is simple adjustment method.

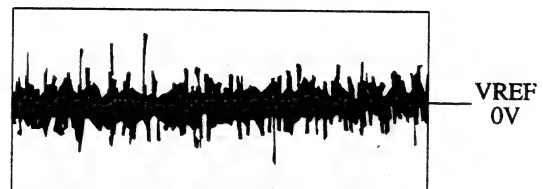
— Simple adjustment —

Note: Since the exact adjustment cannot be performed, remember the positions of the controls before the performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure:



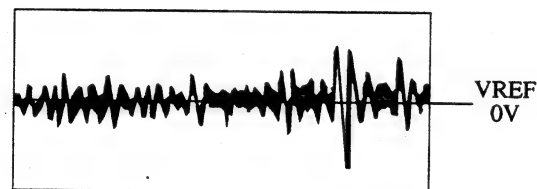
- 1) Keep the set horizontal. (If the set is not kept horizontally, this adjustment cannot be performed due to the gravity against the 2-axis device.)
- 2) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 3) Connect an oscilloscope to TP3 (TE), TP2 (VREF) of the CD C.B.
- 4) Adjust SFR153 so that the waveform appears as shown in the figure below. (tracking gain adjustment)



VOLT/DIV: 50mV  
TIME/DIV: 1mS

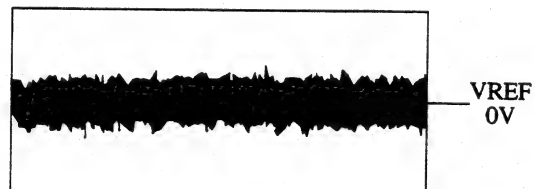
- Incorrect example

Low tracking gain  
(The fundamental wave appears as compared with the waveform adjusted.)



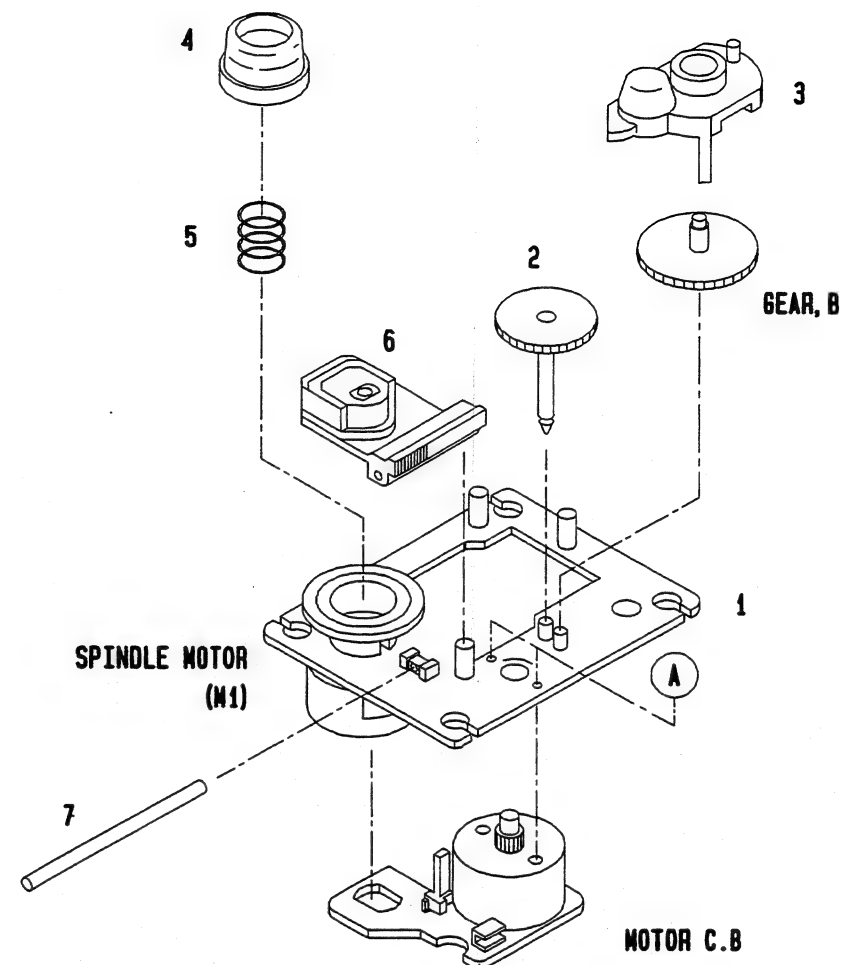
VOLT/DIV: 50mV  
TIME/DIV: 1mS

High tracking gain  
(The frequency of the fundamental wave is higher than that in low gain.)



VOLT/DIV: 50mV  
TIME/DIV: 1mS

## CD MECHANISM EXPLODED VIEW 1 / 1 (KSM-2131BAM <A, B>)



## CD MECHANISM PARTS LIST 1 / 1 (KSM-2131BAM <A, B>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	-	-	MOTOR CHASSIS ASSY	6	87-070-445-010	-	OPTICAL PICK UP KSS-213B
2	92-625-188-020	-	GEAR (A)	7	94-917-565-010	-	SHAFT SLED
3	92-625-544-010	-	COVER	A	87-261-032-210	-	V+2-3
4	92-625-186-020	-	RING CENTER C				
5	92-625-191-010	-	SPRING COMPRESSION				

# 4ZG-1B

## ELECTRICAL MAIN PARTS LIST

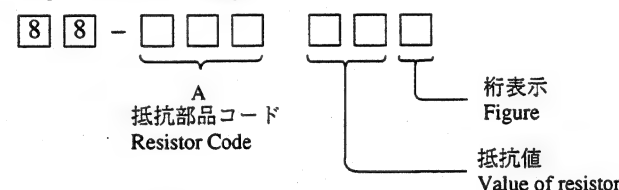
DESCRIPTION で判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC							
	87-070-336-019		IC, TC 9284 BF	C162	87-010-248-089		CAP, E 220-10 SME
	87-002-407-019		IC TA8191F	C163	87-010-260-089		CAP, E 47-25 SME
	87-017-888-089		IC, NJM4558MD	C164	87-010-403-089		CAP, E 3.3-50 SME
	87-070-305-019		IC, BA6897S	C165	87-010-213-089		C-CAP, S 0.015-25 B
	87-001-982-019		IC, TA7291S	C166	87-010-187-089		C-CAP, S 5600P-50 B
	87-017-802-010		IC, LC7872E<G>	C167	87-012-365-089		C-CAP, S 0.027-25V BK
	87-017-803-010		IC, LC32464P-80<G>	C168	87-010-189-089		C-CAP, S 8200P-50 B
				C169	87-015-883-089		C-CAP 0.022-25BK
				C170	87-010-320-089		C-CAP, S 68P-50 CH
				C171	87-010-382-089		CAP, E 22-25 SME
TRANSISTOR							
	87-026-297-089		C-TR, DTA144TK	C172	87-010-197-089		C-CAP, S 0.01-25 B
	89-110-373-089		C-TR, 2SA1037 S	C173	87-010-263-089		CAP, E 100-10 SME 5X11
	89-420-052-089		TR 2SD2005Q (T105)	C174	87-010-178-089		C-CAP, S 1000P-50 B
	89-421-722-389		TR, 2SD2172 V/W	C175	87-010-805-089		C-CAP, S 1-16F
	89-320-011-089		TR, 2SC2001K	C201	87-010-318-089		C-CAP, S 47P-50 CH
	87-026-223-089		C-TR, DTC143TK	C202	87-010-318-089		C-CAP, S 47P-50 CH
	89-113-187-089		TR, 2SA1318TU	C203	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-608-089		C-TR, DTC 123 JK	C204	87-010-321-089		C-CAP, S 82P-50 CH
	89-406-555-089		TR, 2SD655E<G>	C205	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-239-089		C-TR, DTC114TK<G>	C206	87-010-321-089		C-CAP, S 82P-50 CH
	89-327-125-089		C-TR, 2SC2712GR<D>	C207	87-012-153-089		C-CAP, S 120P-50 CH
				C208	87-012-153-089		C-CAP, S 120P-50 CH
				C209	87-012-153-089		C-CAP, S 120P-50 CH
				C210	87-012-153-089		C-CAP, S 120P-50 CH
				C211	87-010-405-049		CAP, E 10-50 SME
DIODE							
	87-020-465-089		DIODE, 1SS133	C212	87-010-405-049		CAP, E 10-50 SME
				C213	87-010-186-089		C-CAP, S 4700P-50 B
				C214	87-010-186-089		C-CAP, S 4700P-50 B
				C231	87-010-112-089		CAP, E 100-16
				C232	87-010-060-049		CAP, E 100-16 7L
3CD C.B							
C101	87-015-819-089		CHIP CAP 0.01	C301	87-010-196-089		C-CAP, S 0.1-25 F
C102	87-015-819-089		CHIP CAP 0.01	C302	87-010-260-089		CAP, E 47-25 SME
C103	87-015-676-089		CAP, E 47-6.3 7L	C501	87-010-221-049		CAP, E 470-10 SME
C104	87-015-676-089		CAP, E 47-6.3 7L	C502	87-010-197-089		C-CAP, S 0.01-25 B
C106	87-010-197-089		C-CAP, S 0.01-25 B	C503	87-010-263-089		CAP, E 100-10 SME 5X11
C107	87-010-404-089		CAP, E 4.7-50 SME	C504	87-010-196-089		C-CAP, S 0.1-25 F
C108	87-010-197-089		C-CAP, S 0.01-25 B	C505	87-010-196-089		C-CAP, S 0.1-25 F
C109	87-010-248-049		CAP, E 220-10 SME	C506	87-010-196-089		C-CAP, S 0.1-25 F
C110	87-010-263-049		CAP, E 100-10	C507	87-010-196-089		C-CAP, S 0.1-25 F
C111	87-010-309-089		C-CAP, 1000P-50 CH	C508	87-010-221-049		CAP, E 470-10 SME
C112	87-010-197-089		C-CAP, S 0.01-25 B	C509	87-010-196-089		C-CAP, S 0.1-25 F
C113	87-010-184-089		C-CAP, S 3300P-50 B	C510	87-010-196-089		C-CAP, S 0.1-25 F
C114	87-010-060-049		CAP, E 100-16 7L	C601	87-010-197-089		C-CAP, S 0.01-25 B
C115	87-010-197-089		C-CAP, S 0.01-25 B	C602	87-010-381-089		CAP, E 330-16 SME
C116	87-010-197-089		C-CAP, S 0.01-25 B	C603	87-010-196-089		C-CAP, S 0.1-25 F
C117	87-010-322-089		C-CAP, S 100P-50 CH	C701	87-010-322-089		C-CAP, S 100P-50 CH
C120	87-010-314-089		C-CAP, S 22P-50 CH	C702	87-010-322-089		C-CAP, S 100P-50 CH
C121	87-010-314-089		C-CAP, S 22P-50 CH	C703	87-010-318-089		C-CAP, S 47P-50 CH
C123	87-010-197-089		C-CAP, S 0.01-25 B	C704	87-010-178-089		C-CAP, S 1000P-50 B
C124	87-010-184-089		C-CAP, S 3300P-50 B	C705	87-010-178-089		C-CAP, S 1000P-50 B
C125	87-010-805-089		C-CAP, S 1-16F	C712	87-010-982-049		CAP, E 33-25 GAS
C126	87-018-134-089		CAP, TC-U 0.01-16 Y<EXCEPT G>	C801	87-010-197-089		C-CAP, S 0.01-25 B<G>
C127	87-010-196-089		C-CAP, S 0.1-25 F	C802	87-010-260-089		CAP, E 47-25 SME<G>
C152	87-010-196-089		C-CAP, S 0.1-25 F	C803	87-010-194-089		C-CAP, S 0.047-25 F<G>
C153	87-010-154-089		C-CAP, S 10P-50 CH	C804	87-010-260-089		CAP, E 47-25 SME<G>
C154	87-010-322-089		C-CAP, S 100P-50 CH	C805	87-018-134-089		CAP, TC-U 0.01-16 Y<G>
C155	87-010-263-089		CAP, E 100-10 SME 5X11	C806	87-010-260-089		CAP, E 47-25 SME<G>
C156	87-010-197-089		C-CAP, S 0.01-25 B	C807	87-010-405-089		CAP, E 10-50 SME<G>
C157	87-012-141-089		C-CAP, S 0.22-16 F	C808	87-010-197-089		C-CAP, S 0.01-25 B<G>
C158	87-010-545-049		CAP E 0.22-50 SME	C809	87-010-405-049		CAP, E 10-50 SME<G>
C159	87-015-683-080		CAP, E 33-16 7L	C810	87-010-313-089		C-CAP, S 18P-50 CH<G>
C160	87-010-193-089		C-CAP, S 0.033-25 F	C811	87-010-314-089		C-CAP, S 22P-50 CH<G>
C161	87-010-197-089		C-CAP, S 0.01-25 B	C812	87-010-313-089		C-CAP, S 18P-50 CH<G>

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C813	87-010-315-089		C-CAP, S 27P-50 CH<G>	SFR152	87-024-171-089		SFR 4.7K DIA6 V
C814	87-010-197-089		C-CAP, S 0.01-25 B<G>	SW701	87-036-109-019		SW, PUSH SPPB 61
C815	87-010-260-049		CAP, E 47-25 SME<G>	SW702	87-036-109-019		SW, PUSH SPPB 61
C816	87-010-404-089		CAP, E 4.7-50 SME<G>	X101	87-030-402-089		VIB, XTAL 16.9344 MHZ
C817	87-010-221-089		CAP, E 470-10<G>	X801	80-JUC-602-089		VIB, XTAL 17.73MHZ<G>
C818	87-010-196-089		C-CAP, S 0.1-25 F<G>	X802	80-JUC-601-089		VIB, XTAL 14.31MHZ<G>
C819	87-010-321-089		C-CAP, S 82P-50 CH<G>				
C820	87-010-178-089		C-CAP, S 1000P-50 B<G>	LED C.B			
C821	87-010-196-089		C-CAP, S 0.1-25 F<G>	LED701	87-070-200-089		LED, SLP636C-81-S-T1
C822	87-010-403-089		CAP, E 3.3-50 SME<G>	LED702	87-017-350-080		LED, SEL1550CM
C824	87-018-134-089		CAP, TC-U 0.01-16 Y	LED703	87-017-350-080		LED, SEL1550CM
C901	87-010-260-089		CAP, E 47-25 SME<D>	LED704	87-070-200-089		LED, SLP636C-81-S-T1
C902	87-010-196-089		C-CAP, S 0.1-25 F<D>	T-T C.B			
CON2	84-ZG1-616-019		CONN ASSY, 6P H	C401	87-018-214-089		CAP TC U 0.1-50 F
EMI801	87-008-474-089		F-BEAD, EMI BL02RN1<G>	M401	87-045-364-019		MOTOR, (BCH3B14)
EMI802	87-008-474-089		F-BEAD, EMI BL02RN1<G>	PS401	87-026-573-019		P-SNSR, GP1S53V
FC1	85-NFT-611-119		FF-CABLE, 16P-1.0				
FC4	84-ZG1-614-219		CABLE, FFC 5P-1.25	MOTOR C.B			
J801	87-009-502-010		JACK, PIN 1PY EARTH<G>	M2	9X-262-513-210		SLED MOTOR ASSY
LED901	87-A40-123-019		LED, SLZ-8128A-01-B<D>	PIN3	91-564-722-110		CONNECTOR 6P
M601	87-045-305-019		MOTOR, RF-500TB	SW1	91-572-085-110		LEAF SW
R184	87-022-361-089		C-RES, S 47K-1/10W F				
R185	87-022-361-089		C-RES, S 47K-1/10W F				
R186	87-022-361-089		C-RES, S 47K-1/10W F				
R187	87-022-361-089		C-RES, S 47K-1/10W F				
R188	87-022-361-089		C-RES, S 47K-1/10W F				
R189	87-022-361-089		C-RES, S 47K-1/10W F				
R401	87-022-186-089		C-RES, 82-1/4W J				
R403	87-022-186-089		C-RES, 82-1/4W J				
SFR151	87-024-176-089		SFR, 100K DIA6 V				

### ○ チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



### チップ抵抗 Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)			抵抗コード : A Resistor Code: A
				外形／Form	L	W	t
1/16W	1608	±5%	CJ		1.6	0.8	0.45
1/10W	2125	±5%	CJ		2	1.25	0.45
1/8W	3216	±5%	CJ		3.2	1.6	0.55

Refer to the following pages for the 4ZG-1 and the common sections.

### ■ IC DESCRIPTION

LC7872E ..... See page 62

### ■ MECHANICAL EXPLODED VIEW 1 / 1

See page 95

### ■ MECHANICAL PARTS LIST 1 / 1

See page 96

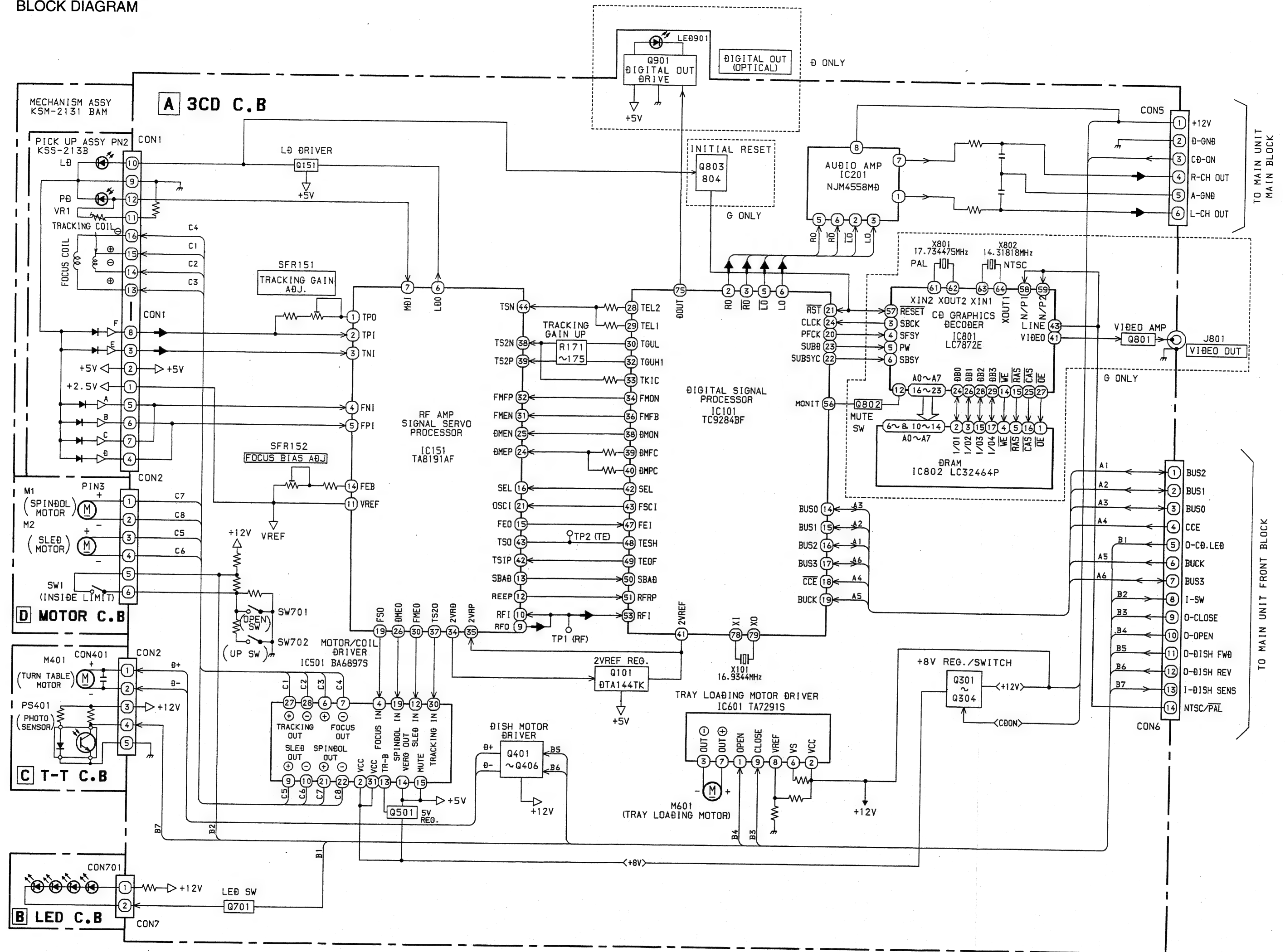
### ■ CD MECHANISM EXPLODED VIEW 1 / 1

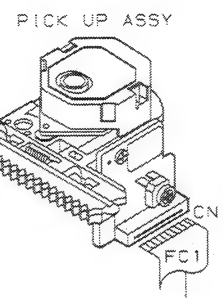
See page 114

### ■ CD MECHANISM PARTS LIST 1 / 1

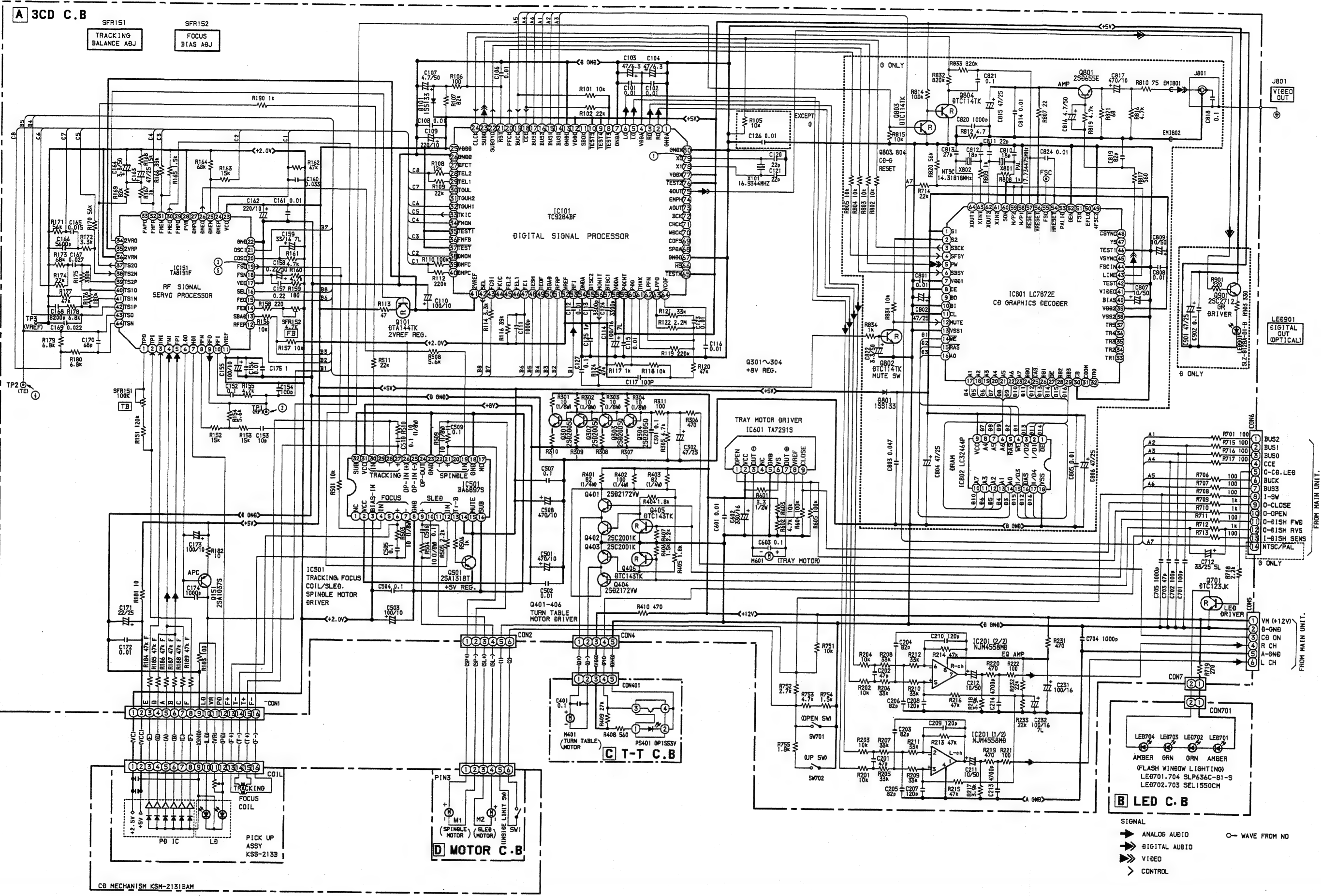
See page 114







SCHEMATIC DIAGRAM

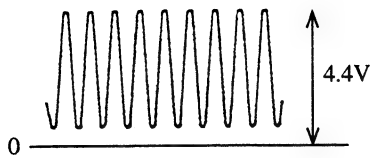




WAVE FORM

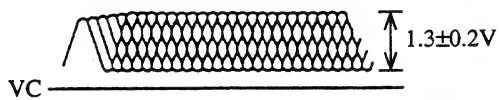
① SYSTEM CLOCK  
IC101 Pin ② (XO)  
f=16.9344MHz

VOLT/DIV: 2V  
TIME/DIV: 0.1μs



② RF  
TP1 (RF)

VOLT/DIV: 500mV  
TIME/DIV: 0.5μs



③ Focus  
IC151 Pin ⑩ (FSO)

VOLT/DIV: 200mV  
TIME/DIV: 2ms

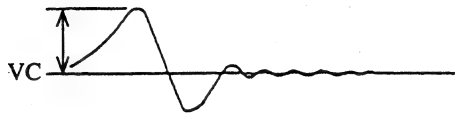


④ Tracking  
TP2 (TE)

TIME/DIV: 1ms

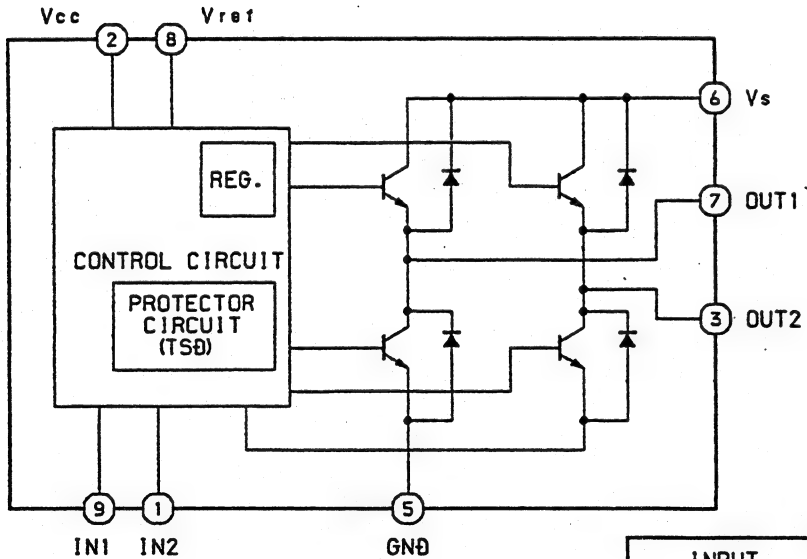


⑤ Focus Search  
IC151 Pin ⑩ (FSO)



IC BLOCK DIAGRAM

IC, TA7291



INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW
0	1	L	H	CCW
1	1	L	L	BRAKE

∞ : HI IMPEDANCE  
NOTE : INPUT "H" ACTIVE

IC DESCRIPTION

IC, TC9284BF

Pin No.	Pin name	I/O	Description
1	GNDA	—	D/A converter R-channel analog GND.
2	RO	O	R-channel data positive output.
3	RO	O	R-channel data inverted output.
4	VDA	—	D/A converter power supply.
5	LO	O	L-channel data inverted output.
6	LO	O	L-channel data positive output.
7	GNDA	—	D/A converter L-channel analog GND.
8~10	TEST3~TEST5	I	TEST pin. Normally "H" or open.
11	SBOK	O	Sub code Q data CRCC judgment result output. Judgment result OK: H
12	VDDD	—	Digital power supply. (+5 V)
13	GNDD	—	Digital GND.
14~17	BUS0~BUS3	I/O	μprocessor interface, data input/output.
18	CCE	I	μprocessor interface, chip enable signal input. When "L" : BUS 3~0 are active
19	BUCK	I	μprocessor interface, clock input.
20	PFC	O	PB frame sync output.
21	RST	I	Reset signal input. "L" at reset.
22	SUBSY	O	Sub code block sync output. When sub code is detected, "H" at S1 position.
23	SUBD	O	Sub code P~W output.
24	CLCK	I	Sub code P~W data read clock input.
25	VDDD	—	Digital power supply. (+5 V)
26	GNDD	—	Digital GND.
27	DFCT	O	Defect detection signal output. When defect is detected: "VREF", normally "HiZ".
28	TEL2	O	Tracking gain adjustment analog switch output. "VREF", or "HiZ".
29	TEL1	O	Tracking gain adjustment analog switch output. "VREF", or "HiZ".
30	TGUL	O	Analog switch output for tracking servo gain up. Polarity in gain-up mode and normal mode can be selected by command.
31	TGUH2	O	Analog switch output for tracking servo gain up. "HiZ" for gain-up, normally "VREF".
32	TUGH1	O	TGUH1 during normal playback. TGUH2: not used
33	TKIC	O	Tracking actuator kick signal output. NKICx and CKICx are used for kick during tracking gain adjustment. "VREF" for outermost track. "O" for moving toward inner track. Normally "HiZ".
34	FMON	O	Analog switch output to turn ON/OFF the feed servo. "HiZ" to turn ON servo. "VREF" to turn OFF servo.
35	TEST1	I	TEST pin. Normally "H" or open.
36	FMFB	O	Feed motor FWD/BWD direction control signal output. "2VREF" for outmost track. "O" for moving toward inner track. Normally "HiZ".
37	TEST	I	TEST pin. Normally "H" or open.
38	DMON	O	Analog switch output to select gain of the disc motor drive circuit. "HiZ" for CLV servo OFF, "HiZ" or "VREF" can be selected by command.

Pin No.	Pin name	I/O	Description			
39	DMPC	O	Disc motor CLV servo AFC signal output.			
			Operation	Command	DMFC output	
			Motor acceleration	DMFK	"2VREF"	
			CLV servo ON	DMSV	AFC signal (PWM)	
			Motor brake	DMBK	"L"	
			CLV servo OFF	DMOFF	"VREF"	
40	DMPC	O	Disc motor CLV servo APC signal output.			
41	2VREF	—	Analog power supply. (twice the "VREF" voltage)			
42	SEL	O	Servo mode select output. It turns ON/OFF the laser diode (LD) and focus servo.			
			SEL output	LD	Focus servo	Operating mode
			"L"	OFF	OFF	LD OFF
			"HiZ"	ON	OFF	Focus search
			"H"	ON	ON	Focus ON (normal play)
43	FCSI	O	Focus actuator drive signal output during focus search mode. "VDDA" to move the lens far from disc. "L" to move the lens closer to disc. Normally "HiZ".			
44	FKIC	O	Focus actuator drive signal output during focus adjustment mode. "VDDA" to move the lens far from disc. "L" to move the lens closer to disc. Normally "HiZ".			
45, 46	FEL1, FEL2	O	Focus gain adjustment analog switch output. "VREF" or "HiZ".			
47	FEI	I	Focus error signal input.			
48	TESH	I	Analog switch input to track error signal sample-and-hold.			
49	TEOF	O	Focus gain adjustment analog switch output. "VREF" when tracking servo off.			
50	SBAD	I	Sub beam added signal input.			
51	RFRP	I	RF ripple signal input.			
52	VREF	—	Analog power supply.			
53	RFI	I	RF signal input.			
54	GNDA	—	Analog GND.			
55	DTSC2	O	Data slice control EFM signal inverted output.			
56	MONI T	O	Internal signal monitored output. EFMO, PLCK or LOCK signals can be selected by command. Can be muted. (Not used)			
57	DTSC 1	O	Data slice control EFM signal positive polarity output.			
58	VDDA	—	Analog power supply.			
59	PDCNT	I	PDO output control signal input. "L" to fix to "HiZ" forcibly. "H" : normal output.			
60	PDO	O	Phase error signal between EFM and PLCK signals is output.			
61	TMAX	O	TMAX detected result output.			
			TMAX detected result	TMAX output		
			Longer than specified cycle	"L"		
			Shorter than specified cycle	"VREF"		
			Within specified cycle	"HiZ"		
62	LPFN	I	Low-pass filter amplifier inverted input.			

Pin No.	Pin name	I/O	Description
63	LPFO	O	Low-pass filter amplifier output.
64	VCOF	O	VCO filter output.
65	TESTX	I	TEST pin. Normally "H" or "L" .(Connected to +5 V)
66	HS	O	Double speed mode output. "H" : normal speed. "L" : double speed
67	GNDD	—	Digital GND.
68	SPDA	O	Processor status signal output.
69	COFS	O	Correction circuit frame clock (7.35 kHz) output.
70	WDCK	O	Word clock (88.2 kHz) output. SUBQ, BUF0V or 1PF can be selected by the $\mu$ processor command. (Not used)
71	CHCK	O	Channel clock (44.1 kHz) output. "L" for L-channel. "H" for R-channel.
72	BCK	O	Bit clock (1.4112 MHz) output.
73	AOUT	O	Audio data output. (Not used)
74	EMPH	O	Emphasis ON/OFF select signal. "H" : emphasis ON. "L" for emphasis OFF
75	DOUT	O	DIGITAL SIGNAL output.
76	TEST2	I	TEST pin. Normally "H".
77	VDDX	—	Crystal oscillator circuit power supply.
78	XI	I	External crystal oscillator is connected. (Crystal oscillator frequency 16.9344 MHz)
79	XO	O	External crystal oscillator is connected. (Crystal oscillator frequency 16.9344 MHz)
80	GNDX	—	Crystal oscillator GND.



IC, TA8191F

Pin No.	Pin Name	I/O	Description
1	TPO	O	Sub beam I-V amplifier (TA Amp) output terminal.
2	TPI	I	Sub beam I-V amplifier (TA Amp) input terminal.
3	TNI	I	Sub beam I-V amplifier (TA Amp) input terminal.
4	FNI	I	Main beam I-V amplifier (FN Amp) input terminal.
5	FPI	I	Main beam I-V amplifier (FP Amp) input terminal.
6	LDO	O	Laser diode amplifier (LD Amp) output terminal.
7	MDI	I	Monitor photo diode amplifier (MD Amp) input terminal.
8	RFN	I	RF amplifier reversed phase input terminal.
9	RFO	O	RF amplifier output terminal.
10	RFI	I	RF ripple signal generator circuit input terminal.
11	VREF	O	Reference voltage output terminal (+2.1 V).
12	RFRP	O	RF ripple signal output terminal.
13	SBAD	O	Scar detection signal output terminal.
14	FEB	I	Focus error balance adjustment input terminal.
15	FEO	O	Focus error amplifier (FE Amp) output terminal.
16	SEL	I	Analog switch control signal input terminal.
17	VEE	—	Power supply terminal. (TA8190F; -5 V, TA8191F; GND)
18	FSN	I	Focus output amplifier (FS Amp) reversed phase input terminal.
19	FSO	O	Focus output amplifier (FS Amp) output terminal.
20	COSC	O	External capacitor to generate focus search signal is connected to this terminal.
21	OSCI	I	External input to control the built-in power supply to generate focus search signal is connected to this terminal.
22	GND	—	GND.
23	VCC	I	Power supply terminal (+5 V).
24	DMEP	I	Disc motor amplifier (DM Amp) positive phase input terminal.
25	DMEN	I	Disc motor amplifier (DM Amp) reversed phase input terminal.
26	DMEO	O	Disc motor amplifier (DM Amp) output terminal.
27	DMPO	O	Disc motor drive amplifier (DMP Amp) output terminal. (Not used).
28	PVR	I	Drive amplifier reference voltage input terminal.
29	FMPO	O	Feed motor drive amplifier (FMP Amp) output terminal. (Not used).
30	FMEO	O	Feed motor amplifier (FM Amp) output terminal.
31	FMEN	I	Feed motor amplifier (FM Amp) reversed phase input terminal.
32	FMEP	O	Feed motor amplifier (FM Amp) positive phase input terminal.
33	FAPO	O	Focus actuator drive amplifier (FAP Amp) output terminal. (Not used).
34	2VRO	I	2 V REF amplifier (2 V REF Amp) output terminal.
35	2VRP	I	2 V REF amplifier (2 V REF Amp) positive phase input terminal.
36	2VRN	I	2 V REF amplifier (2 V REF Amp) reversed phase input terminal.
37	TS2O	O	Tracking servo amplifier 2 (TS2 Amp) output terminal.
38	TS2N	I	Tracking servo amplifier 2 (TS2 Amp) reversed phase input terminal.
39	TS2P	I	Tracking servo amplifier 2 (TS2 Amp) positive phase input terminal.
40	TS1O	O	Tracking servo amplifier 1 (TS1 Amp) output terminal.

Pin No.	Pin Name	I/O	Description
41	TS1N	I	Tracking servo amplifier 1 (TS1 Amp) reversed phase input terminal.
42	TS1P	I	Tracking servo amplifier 1 (TS1 Amp) positive phase input terminal.
43	TSO	O	Tracking output amplifier (TS Amp) output terminal.
44	TSN	I	Tracking output amplifier (TS Amp) reversed phase input terminal.

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	• Test mode is activated.	• FL display check (All displays light.)
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Laser diode turns always ON. (CD block power is ON.)</li> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<ul style="list-style-type: none"> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul> <p><b>FOCUS SERVO</b></p> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<p><b>FOCUS SERVO/TRACKING SERVO</b></p> <p><b>CLV SERVO/SLED SERVO</b></p> <p>Check FOK/FZC</p>
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON</li> </ul> <p style="text-align: right;">* NOTE 2</p>	<p><b>TRACKING SERVO ON/OFF</b></p> <p>Tracking balance (traverse) adjustment</p>
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> </ul> <p style="text-align: right;">* NOTE 3</p> <p>(During playback, machine operates normally.)</p>	<p><b>SLED SERVO</b></p> <p>Check SLED mechanism operation</p>

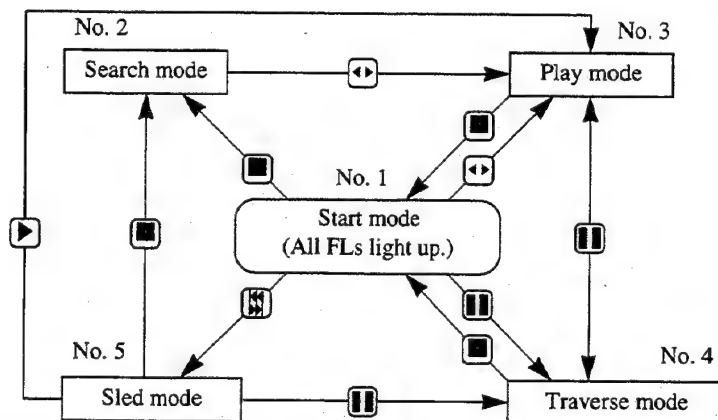
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

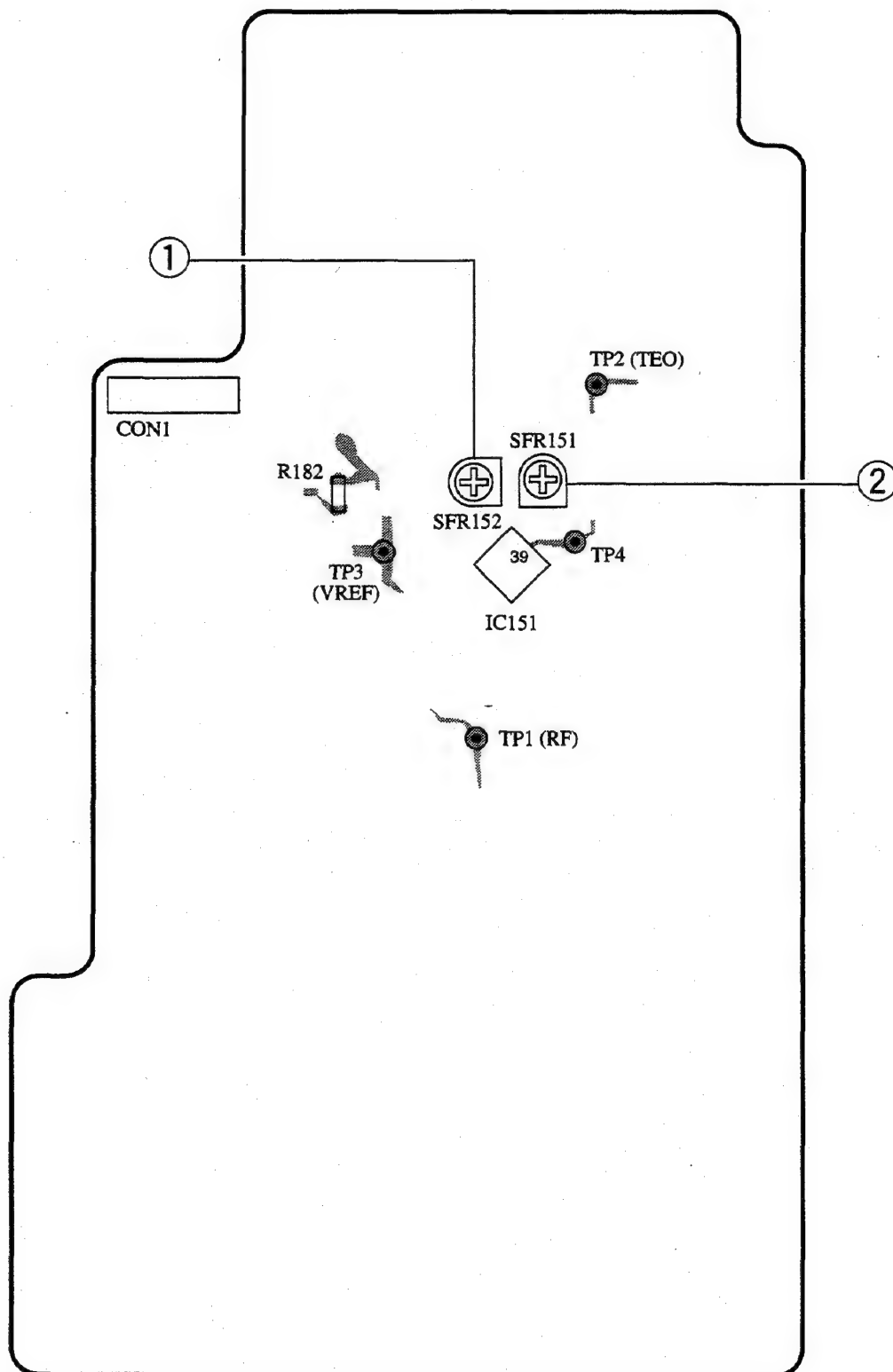
### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

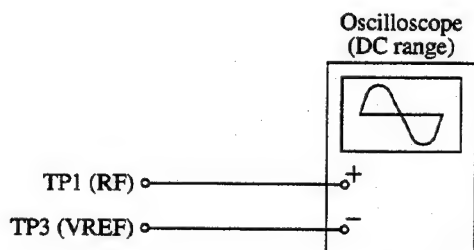
**A** 3CD C.B (PATTERN SIDE)



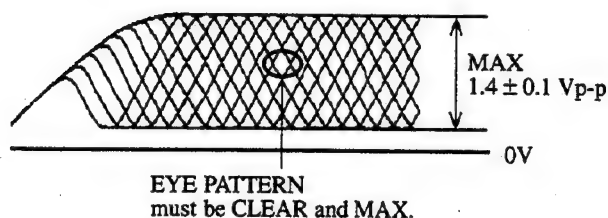
- Note:**
- Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.
  - During adjustment, connect (⊖) pin of an oscilloscope to TP3 (VREF).

### 1. Focus Bias Adjustment

Make the focus bias adjustment when replacing and repairing the optical block.

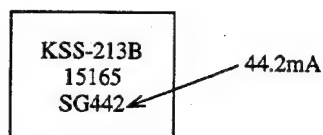


- 1) Connect an oscilloscope to test points TP1 (RF) and TP3 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second program.
- 4) Adjust SFR152 so that RF signal of the test point TP2 (RF) is MAX and CLEARREST.



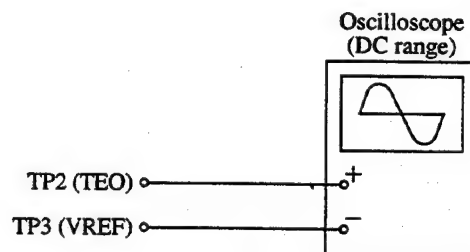
VOLT/DIV: 0.5V  
TIME/DIV: 0.5μS

**Note :** The current of the laser signal can be checked with the voltages on both sides of R182 (voltage across 10Ω). The difference for the specified value shown on the label must be within ± 6.0mA.

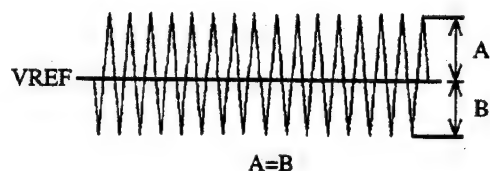


$$\text{Laser current } I_{op} = \frac{\text{Voltage across R182}}{10\Omega}$$

### 2. Tracking Balance Adjustment



- 1) Short circuit between TP3 (VREF) and TP4.
- 2) Connect an oscilloscope to test points TP2 (TEO) and TP3 (VREF).
- 3) Turn on the power switch.
- 4) Insert test disc TCD-782 (YEDS-18) and press the PLAY (▶) button.
- 5) Adjust SFR151 so that the waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
- 6) After the adjustment is completed, remove the connected lead wires from the test point TP3 (VREF) and TP4.



VOLT/DIV: 20mV  
TIME/DIV: 2mS

# 4ZG-1Z

## ELECTRICAL MAIN PARTS LIST

DESCRIPTION で判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

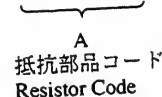
REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC				C103	87-012-149-089		C-CAP, S 30P-50 CH
	87-A20-165-010		C-IC, LA9230M	C105	87-010-196-089		C-CAP, S 0.1-25 F
	87-A20-164-010		C-IC, LC78630E-T	C106	87-010-196-089		C-CAP, S 0.1-25 F
	87-017-888-089		IC, NJM4558MD	C108	87-010-154-089		C-CAP, S 10P-50 CH
	87-070-305-019		IC, BA6897S	C109	87-010-154-089		C-CAP, S 10P-50 CH
	87-001-982-019		IC, TA7291S	C111	87-010-196-089		C-CAP, S 0.1-25 F
TRANSISTOR				C112	87-010-404-089		CAP, E 4.7-50 SME
	87-026-463-089		TR, 2SA933S (RS)	C113	87-010-196-089		C-CAP, S 0.1-25 F
	89-406-555-089		TR, 2SD655E	C114	87-010-263-089		CAP, E 100-10 SME
	89-320-011-089		TR, 2SC2001K	C201	87-010-318-089		C-CAP, S 47P-50 CH
	87-026-223-089		C-TR, DTC143TK	C202	87-010-318-089		C-CAP, S 47P-50 CH
	89-113-187-089		TR, 2SA1318TU	C203	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-470-089		TR, HN1C03 F B	C204	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-608-089		C-TR, DTC 123 JK	C205	87-010-321-089		C-CAP, S 82P-50 CH
	89-327-125-089		C-TR, 2SC2712GR<D>	C206	87-010-321-089		C-CAP, S 82P-50 CH
DIODE				C207	87-010-318-089		C-CAP, S 47P-50 CH
	87-020-465-089		DIODE, 1SS133	C208	87-010-318-089		C-CAP, S 47P-50 CH
3CD C.B				C209	87-010-318-089		C-CAP, S 47P-50 CH
C11	87-016-081-089		C-CAP, S 0.1-16 RK	C210	87-010-318-089		C-CAP, S 47P-50 CH
C12	87-012-157-089		C-CAP, S 330P-50 CH	C211	87-010-403-089		CAP, E 3.3-50 SME
C13	87-016-369-089		C-CAP, S 0.033-25 B K	C212	87-010-403-089		CAP, E 3.3-50 SME
C14	87-016-081-089		C-CAP, S 0.1-16 RK	C213	87-010-186-089		C-CAP, S 4700P-50 B
C15	87-010-596-089		C-CAP, S 0.047-16 RK	C214	87-010-186-089		C-CAP, S 4700P-50 B
C16	87-010-956-089		C-CAP, S 0.068-25 B	C215	87-010-555-049		CAP, E 100-10 GAS
C17	87-010-182-089		C-CAP, S 2200P-50 B	C216	87-010-384-089		CAP, E 100-25 SME
C18	87-016-369-089		C-CAP, S 0.033-25 B K	C301	87-010-196-089		C-CAP, S 0.1-25 F
C19	87-010-213-089		C-CAP, S 0.015-25 B	C302	87-010-260-089		CAP, E 47-25 SME
C20	87-010-178-089		C-CAP, S 1000P-50 B	C501	87-010-221-089		CAP, E 470-10 11L
C21	87-012-393-089		C-CAP, S 0.22-16, R, K	C502	87-010-197-089		C-CAP, S 0.01-25 B
C22	87-016-083-089		C-CAP, S 0.15-16 RK	C504	87-010-196-089		C-CAP, S 0.1-25 F
C23	87-010-197-089		C-CAP, S 0.01-25 B	C505	87-010-196-089		C-CAP, S 0.1-25 F
C24	87-010-186-089		C-CAP, S 4700P-50 B	C506	87-010-196-089		C-CAP, S 0.1-25 F
C25	87-015-694-089		CAP E 0.47-50-7L	C507	87-010-196-089		C-CAP, S 0.1-25 F
C26	87-010-322-089		C-CAP, S 100P-50 CH	C509	87-010-196-089		C-CAP, S 0.1-25 F
C27	87-015-686-089		CAP, E 22-25 7L	C510	87-010-196-089		C-CAP, S 0.1-25 F
C28	87-015-697-089		CAP, E 3.3-50 7L	C601	87-010-197-089		C-CAP, S 0.01-25 B
C29	87-010-184-089		C-CAP, S 3300P-50 B	C602	87-010-381-089		CAP, E 330-16 SME
C30	87-010-146-089		C-CAP, S 2P-50 CH	C603	87-010-196-089		C-CAP, S 0.1-25 F
C31	87-010-186-089		C-CAP, S 4700P-50 B	C701	87-010-322-089		C-CAP, S 100P-50 CH
C32	87-010-148-089		C-CAP, S 4P-50 CH	C702	87-010-322-089		C-CAP, S 100P-50 CH
C33	87-016-081-089		C-CAP, S 0.1-16 RK	C703	87-010-322-089		C-CAP, S 100P-50 CH
C35	87-010-196-089		C-CAP, S 0.1-25 F	C704	87-010-322-089		C-CAP, S 100P-50 CH
C37	87-010-405-089		CAP, E 10-50 SME	C705	87-018-131-089		CAP, TC-U 1000P-50 B
C38	87-010-263-089		CAP, E 100-10 SME	C901	87-010-260-089		CAP, E 47-25 SME<D>
C39	87-010-197-089		C-CAP, S 0.01-25 B	C902	87-010-196-089		C-CAP, S 0.1-25 F<D>
C40	87-010-401-089		CAP, E 1-50 SME	FC1	85-NFT-611-119		FF-CABLE, 16P-1.0
C41	87-016-463-089		C-CAP, S 0.33-16 B	FC4	84-ZG1-614-219		CABLE, FFC 5P-1.25
C42	87-010-263-089		CAP, E 100-10 SME	FC5	84-ZG1-630-019		CABLE FFC 6P-1.25
C43	87-018-134-089		CAP, TC-U 0.01-16 Y	L11	87-003-102-089		COIL, 10UH
C44	87-010-263-089		CAP, E 100-10 SME	LED901	87-A40-123-019		LED, SLZ-8128A-01-B<D>
C46	87-010-196-089		C-CAP, S 0.1-25 F	M601	87-045-383-019		MOT, M9I T2
C47	87-015-684-010		CAP, E 47-16 7L	R102	87-022-345-089		C-RES, S 1.2K-1/10W F
C48	87-010-196-089		C-CAP, S 0.1-25 F	SW701	87-036-109-019		SW, PUSH SPPB 61
C50	87-010-197-089		C-CAP, S 0.01-25 B	SW702	87-036-109-019		SW, PUSH SPPB 61
C51	87-010-263-089		CAP, E 100-10 SME	X101	87-030-402-089		VIB, XTAL 16.9344 MHZ
C101	87-016-081-089		C-CAP, S 0.1-16 RK	LED C.B			
C102	87-016-081-089		C-CAP, S 0.1-16 RK	LED701	87-070-200-089		LED, SLP636C-81-S-T1
				LED702	87-017-350-080		LED, SEL1550CM
				LED703	87-017-350-080		LED, SEL1550CM
				LED704	87-070-200-089		LED, SLP636C-81-S-T1



DRIVE C.B

M1	87-045-358-019	MOT, RF-310TA 43
M2	87-045-356-019	MOT, RF-310TA 30
SW1	87-A90-042-019	SW, LEAF MSW 17310 MVPC

## チップ抵抗部品コードの成り立ち Chip Resistor Part Coding



抵抗値  
Value of resistor

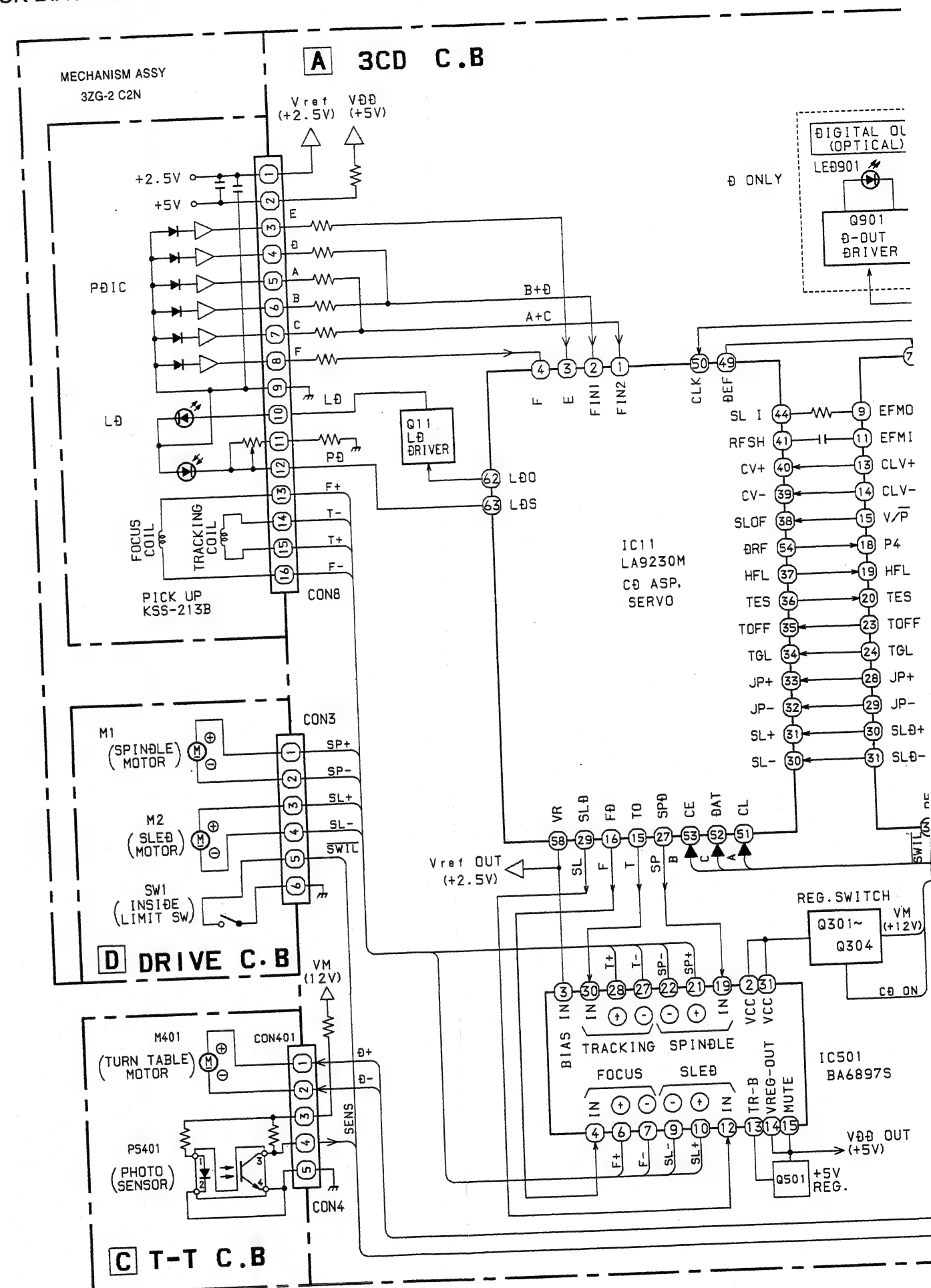
チップ抵抗 Chip resistor				寸法/Dimensions (mm)				抵抗コード : A Resistor Code: A
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	外形/Form	L	W	t	
1/16W	1608	±5%	CJ		1.6	0.8	0.45	108
1/10W	2125	±5%	CJ		2	1.25	0.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.55	128

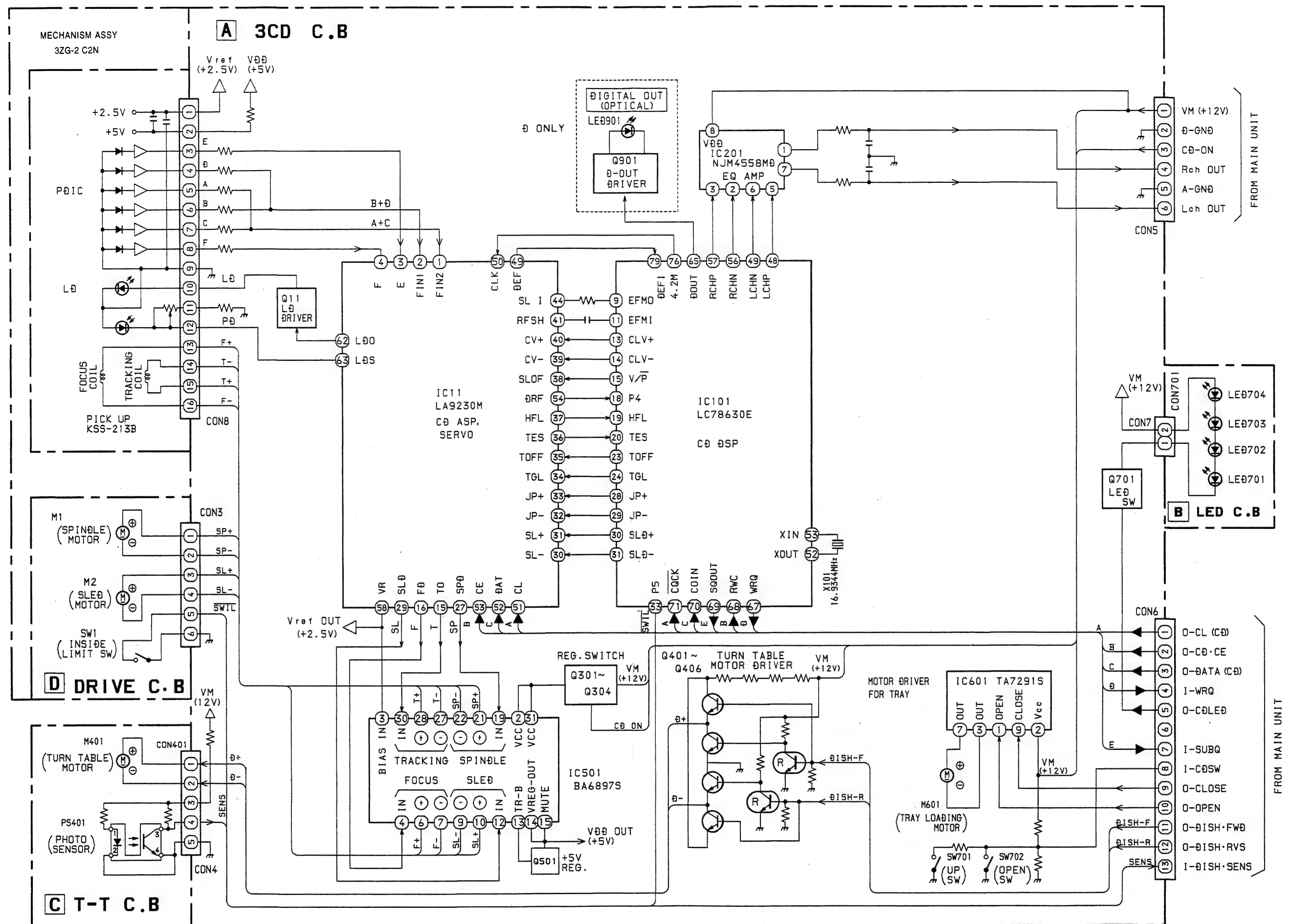
■ MECHANICAL EXPLODED VIEW 1 / 1

See page 30

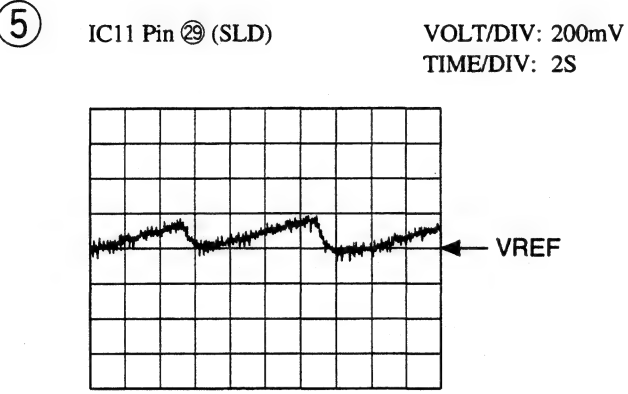
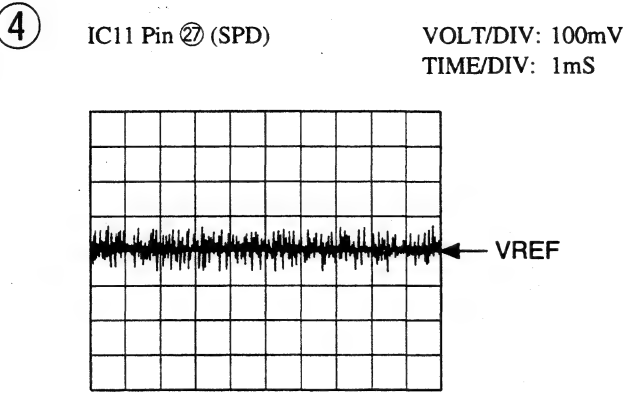
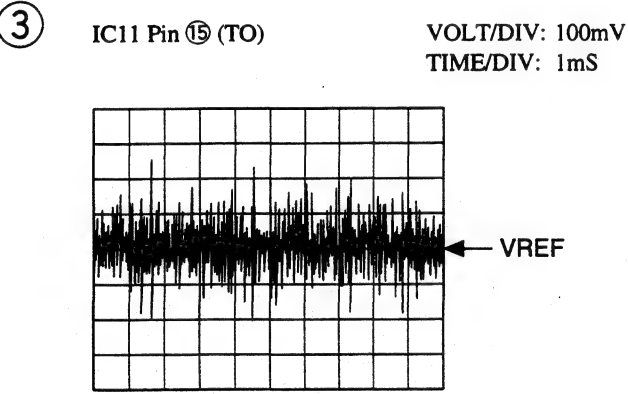
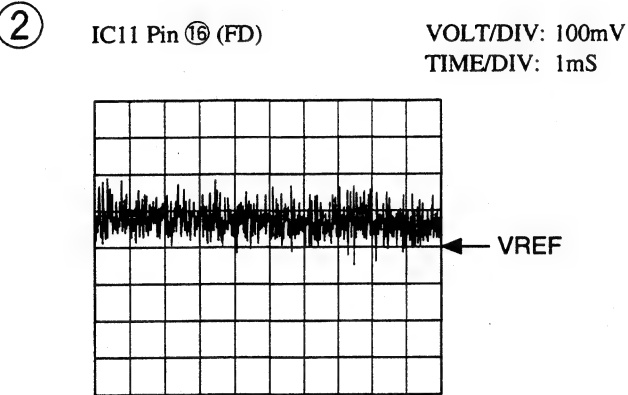
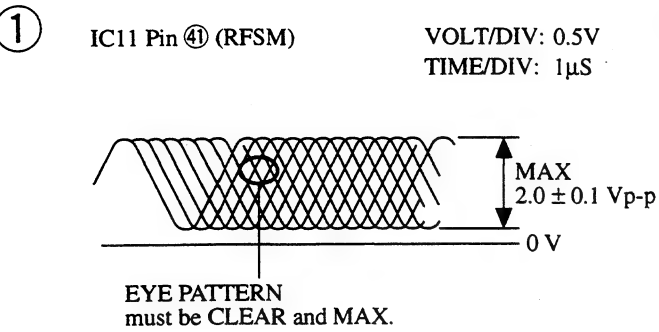
■ MECHANICAL PARTS LIST 1 / 1

See page 96



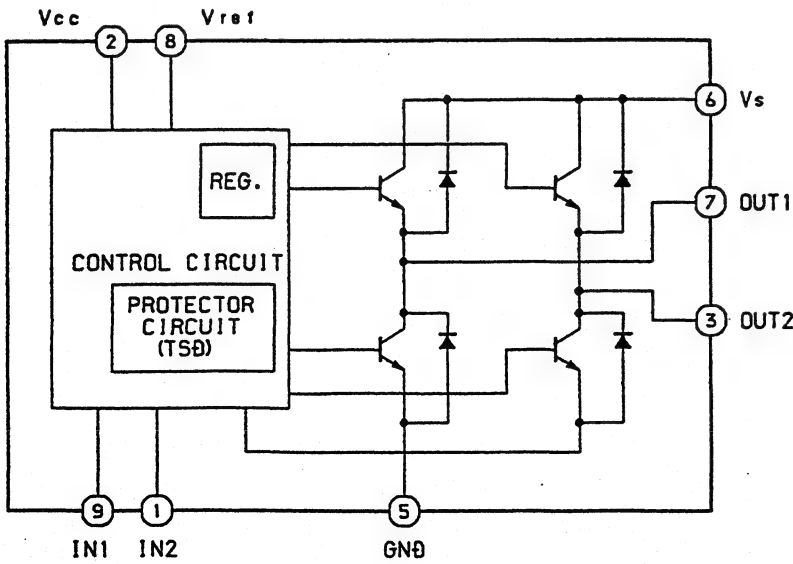


WAVE FORM



IC BLOCK DIAGRAM

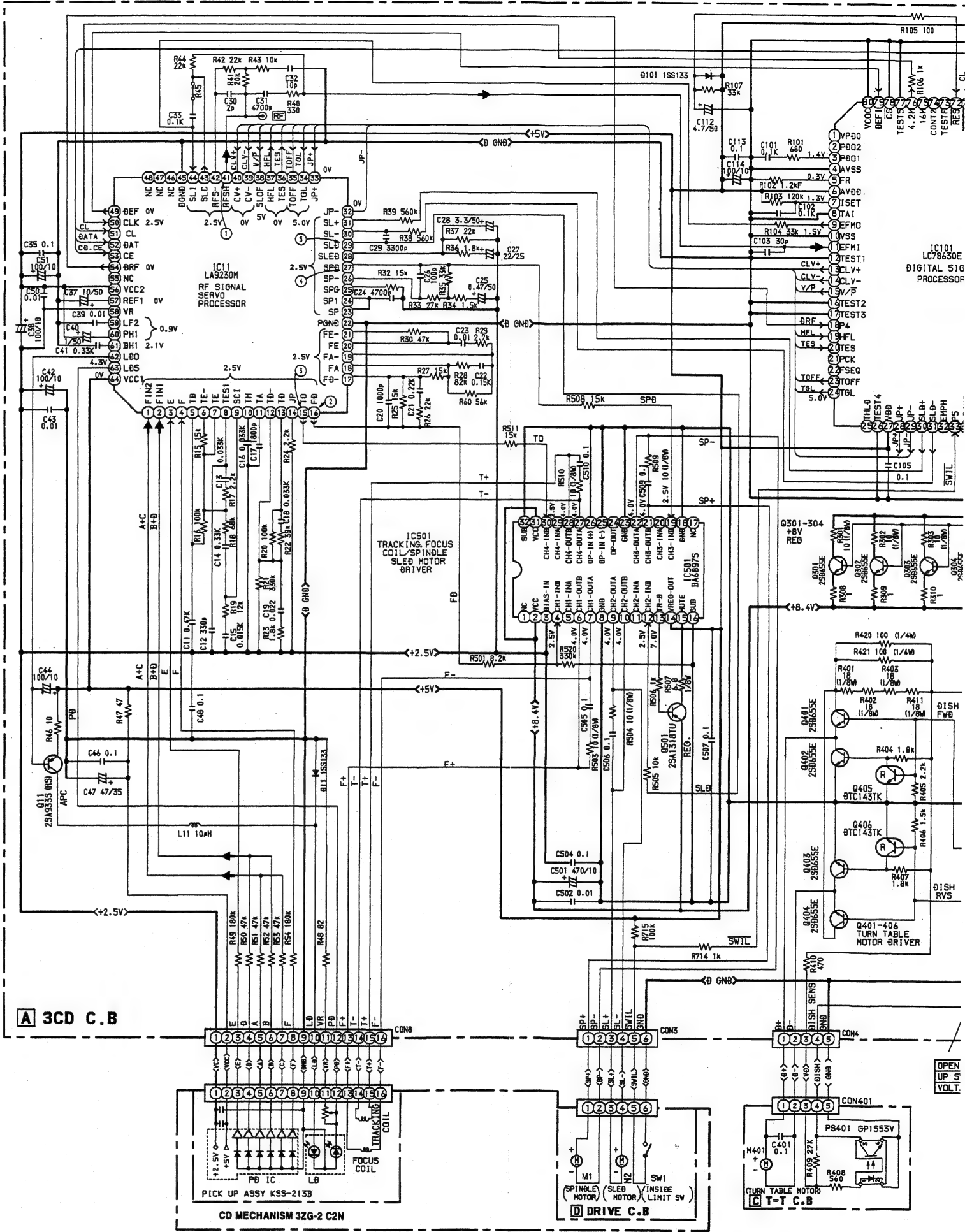
IC, TA7291

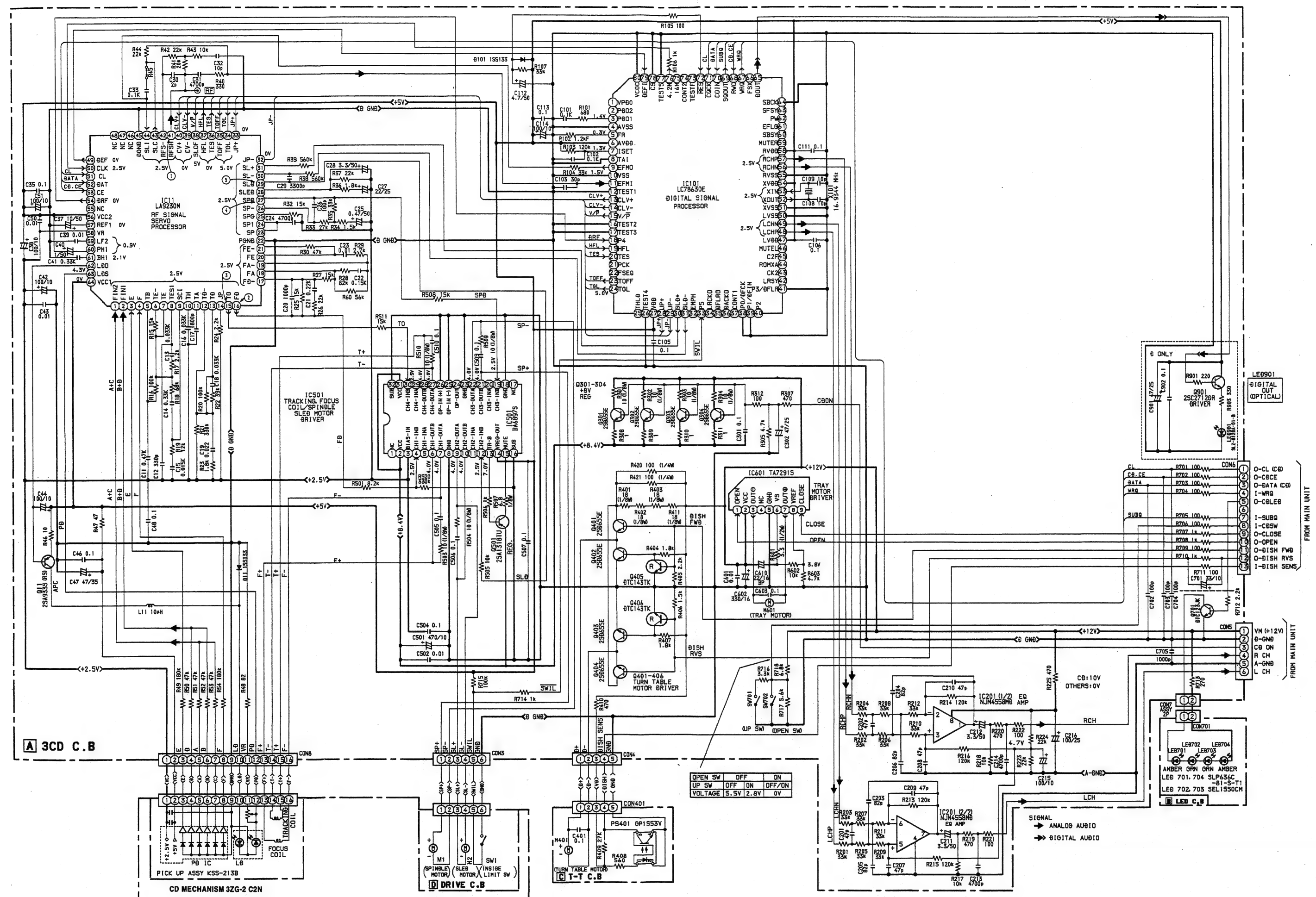


INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW
0	1	L	H	CCW
1	1	L	L	BRAKE

∞ : HI IMPEDANCE  
NOTE : INPUT "H" ACTIVE

SCHEMATIC DIAGRAM











IC DESCRIPTION

IC, LC78630E

Pin No.	Pin Name	I/O	Description
1	VPDO	O	Vari-pitch PLL charge pump output pin. This pin must be open when not used.
2	PDO2	O	Bit clock playback PLL charge pump output pin during 2 times and 4 times speed. This pin must be open when not used.
3	PDO1	O	Bit clock playback PLL charge pump output pin during normal speed.
4	AVSS	—	Analog system GND. Normally 0V.
5	FR	I	An external resistor to set built-in VCO frequency range is connected to this pin.
6	AVDD	—	Analog system GND.
7	ISSET	I	An external resistor set PD01 and PD02 output current is connected to this pin.
8	TAI	I	Test input pin with built-in pull-down resistor.
9	EFMO	O	EFM signal output pin.
10	VSS	—	Digital system GND. Normally 0V.
11	EFMI	I	EFM signal input pin.
12	TEST1	I	Test input pin with built-in pull-down resistor.
13	CLV+	O	Spindle servo control output pin. Acceleration when CLV+ is “H”.
14	CLV-	O	Deceleration when CLV- is “H”.
15	V/P	O	Rough servo/phase control automatic selection monitoring output pin. Rough servo at “H”. Phase control mode at “L”.
16, 17	TEST2, TEST3	I	Test input pin with built-in pull-down resistor.
18	P4	I/O	Input/output port.
19	HFL	I	Tracking detection signal input pin. Schmitt input.
20	TES	I	Tracking error signal input pin. Schmitt input.
21	PCK	O	EFM data playback bit clock monitoring pin. 4.3218 MHz when phase is locked during normal speed playback.
22	FSEQ	O	Sync signal detection output pin. When the sync signal detected from the EFM signal agrees with the internally generated sync signal, “H” output.
23	TOFF	O	Tracking OFF output pin.
24	TGL	O	Tracking gain selector output pin. Gain is increased at “L”.
25	THLD	O	Tracking hold output pin.
26	TEST4	I	Test input pin with built-in pull-down resistor.
27	VDD	—	Digital system GND.
28, 29	JP+, JP-	O	Tracking jump output pin. JP+ “H” occurs at acceleration during jump toward outside or decelerator toward inside. JP- “H” occurs at acceleration during jump toward inside or deceleration toward outside.
30, 31	SLD+, SLD-	O	Sled output pin. Four different level can be set using commands.
32	EMPH	O	Emphasis monitoring output. “H” indicates that emphasis disc is being played back.
33	P5	I/O	Input/output.
34	LRCKO	O	Digital filter output. LR clock output pin.
35	DFLRO	O	Digital filter output. LR data output pin. DF is turned OFF with the DFOFF command.
36	DACKO	O	Digital filter output. Bit clock output pin.
37	CONT1	O	Output port.

Pin No.	Pin Name	I/O	Description
38	P0/DFCK	I/O	Input/output port. The DF bit clock input pin during the anti-shock mode.
39	P1/DFIN	I/O	Input/output port. The DF data input pin during the anti-shock mode.
40	P2	I/O	Input/output port. Deemphasis filter ON/OFF selection input pin during the anti-shock mode. Deemphasis filter ON at “H”.
41	P3/DFLR	I/O	Input/output port. The DF LR clock input pin during the anti-shock mode.
42	LRSY	O	For ROMXA • LR clock output pin.
43	CK2	O	For ROMXA • Bit clock output pin. Polarity inversion by the CK2CON command.
44	ROMXA	O	For ROMXA • Interpolation data output pin. The un-interpolated data is output with the ROMXA command.
45	C2F	O	For ROMXA • C2 flat output pin.
46	MUTEL	O	For 1-bit DAC • L-channel mute output pin.
47	LVDD	—	For 1-bit DAC • L-channel power supply.
48	LCHP	O	For 1-bit DAC • L-channel P output pin.
49	LCHN	O	For 1-bit DAC • L-channel N output pin.
50	LVSS	—	For 1-bit DAC • L-channel GND. Normally 0 V.
51	XVSS	—	Crystal oscillator GND. Normally 0 V.
52	XOUT	O	An external 16.9344 MHz crystal oscillator is connected to this pin.
53	XIN	I	33.8688 MHz crystal oscillator is connected during 4 time speed playback.
54	XVDD	—	Crystal oscillator GND.
55	RVSS	—	For 1-bit DAC • R-channel GND. Normally 0 V.
56	RCHN	O	For 1-bit DAC • R-channel N output pin.
57	RCHP	O	For 1-bit DAC • R-channel P output pin.
58	RVDD	—	For 1-bit DAC • R-channel power supply.
59	MUTER	O	For 1-bit DAC • R-channel mute output pin.
60	SBSY	O	Subcode block sync signal output pin.
61	EFLG	O	C1 and C2 error correction monitoring pin.
62	PW	O	ubcode P, Q, R, S, T, U, V and W output pin.
63	SFSY	O	Subcode frame sync signal output pin. The level falls down when the subcode is in standby.
64	SBCK	I	Subcode read clock input pin. Schmitt input. This pin must be connected GND when not used.
65	DOUT	O	Digital output pin.
66	FSX	O	7.35 kHz sync signal divided from the crystal oscillator is output to this pin.
67	WRQ	O	Subcode Q output standby output pin.
68	RWC	I	Read/write control input pin.
69	SQOUT	O	Subcode Q output pin.
70	COIN	I	Microprocessor command input pin.
71	CQCK	I	Command input read clock or subcode read clock input from SQOUT. Schmitt input.
72	RES	I	Chip reset input pin. This pin goes to “L” once when the main power is turned on.
73	TESTF	O	Test output pin.
74	CONT2	O	Output port.

Pin No.	Pin Name	I/O	Description
75	16M	O	16.9344 MHz crystal output pin. 33.8688 MHz is output during 4 times speed playback.
76	4.2M	O	4.2336 MHz output pin.
77	TEST5	I	Test input pin with built-in pull-down resistor.
78	$\overline{\text{CS}}$	I	Chip select input pin with built-in pull-down resistor.
79	DEFI	I	Defect detection signal input pin. This pin must be connected GND when not used.
80	VCOC	I	Vari-pitch VCO control input pin. This pin must be connected GND when not used.

# IC, LA9230M

Pin No.	Pin Name	I/O	Description
1	FIN2	I	Photo diode of pickup is connected to this pin. This signal is added to the FIN1 pin signal to produce the RF signal and subtracted to produce the FE signal.
2	FIN1	I	Photo diode of pickup is connected to this pin.
3	E	I	Photo diode of pickup is connected to this pin. This signal is subtracted from the F pin signal to produce the FE signal.
4	F	I	Photo diode of pickup is connected to this pin.
5	TB	I	DC component of the TE signal is input to this pin.
6	TE-	I	The TE signal gain adjustment resistor is connected between this pin and the TE pin.
7	TE	O	The TE signal output pin.
8	TESI	I	TES (Track Error Sense) comparator input pin. The TE signal is input after passing through band-pass filter.
9	SCI	I	Shock sense input signal is connected to this pin.
10	TH	I	Tracking gain time constant setting pin.
11	TA	O	TA amplifier output pin.
12	TD-	I	An external tracking phase compensation constant is connected between the TD and VR pins.
13	TD	I	An external tracking phase compensation setting pin.
14	JP	I	Tracking jump signal (kick pulse) amplitude setting pin.
15	TO	O	Tracking control signal output pin.
16	FD	O	Focusing control signal output pin.
17	FD-	I	A focusing phase compensation constant is connected between the FD and FA pins.
18	FA	I	A focusing phase compensation constant is connected between the FD- and FA- pins.
19	FA-	I	A focusing phase compensation constant is connected between the FA and FE pins.
20	FE	O	FE signal output pin.
21	FE-	I	An external FE signal gain setting resistor is connected between the TE and this pins.
22	AGND	—	Analog signal GND.
23	SP	O	Single-ended output of the CV+ and CV- pin input signal.
24	SPI	I	Spindle amplifier input.
25	SPG	I	An external spindle gain in 12 cm mode setting resistor is connected to this pin.
26	SP-	I	An external spindle phase compensation constant together with the SPD pin, is connected to this pin.
27	SPD	O	Spindle control signal output pin.
28	SLEQ	I	Sled phase compensation constant is connected to this pin.
29	SLD	O	Sled control signal output pin.
30, 31	SL-, SL+	I	Sled advance signal input pin from microprocessor.
32, 33	JP-, JP+	I	Tracking jump signal input pin from DSP.
34	TGL	I	Tracking gain control signal input pin from DSP. Gain low when TGL = "H".
35	TOFF	I	Tracking off control signal input pin from DSP. Tracking off when TGL = "H".
36	TES	O	The TES signal is output from this pin to DSP.
37	HFL	I	The (HIGH FREQUENCY LEVEL) is used to judge whether the main beam is positioned above the bits or mirror.

Pin No.	Pin Name	I/O	Description
38	SLOF	I	Sled servo off control input pin.
39, 40	CV-, CV+	I	CLV error signal input pin from DSP.
41	RFSM	O	RF output pin.
42	RFS-	I	RF gain setting and 3T compensation constant setting pin together with RFSM pin.
43	SLC	O	The (SLICE LEVEL CONTROL) is the signal which control the data slice level of the RF waveform with DSP. The (SLICE LEVEL CONTROL) is from this pin.
44	SLI	I	The input signal which controls the data slice level with DSP, is connected to this pin.
45	DGND	—	Digital system GND.
46	NC [FSC]	—	No connection. (Output pin for focus search smoothing capacity.)
47, 48	NC	—	No connection.
49	DEF	O	Disc defect detection output pin.
50	CLK	I	Reference clock input pin. The DSP 4.23 MHz is input to this pin.
51	CL	I	Microprocessor command clock input pin.
52	DAT	I	Microprocessor command data input pin.
53	CE	I	Microprocessor command chip enable input pin.
54	DRF	O	(DETECT RF) RF level detection output.
55	NC	—	No connection.
56	VCC2	—	Servo system and digital system Vcc pin.
57	REFI	I	A bypass capacitor for reference voltage is connected to this pin.
58	VR	O	Reference voltage output pin.
59	LF2	I	An external disc defect detection constant is connected to this pin.
60	PH1	I	An external RF signal peak holding capacitor is connected to this pin.
61	BH1	I	An external RF signal bottom holding capacitor is connected to this pin.
62	LDD	O	APC circuit output pin.
63	LDS	I	APC circuit input pin.
64	VCC1	—	RF system Vcc pin.

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• CD block power is ON.</li> </ul>	<ul style="list-style-type: none"> <li>• FL display check (All displays light.)</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Laser diode turns always ON.</li> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<ul style="list-style-type: none"> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul> <p><b>FOCUS SERVO</b></p> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<p><b>FOCUS SERVO/TRACKING SERVO</b></p> <p><b>CLV SERVO/SLED SERVO</b></p> <p>Check DRF</p>
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON</li> </ul> <p style="text-align: right;">* NOTE 2</p>	<p><b>TRACKING SERVO ON/OFF</b></p> <p>Tracking balance (traverse) check</p>
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> </ul> <p style="text-align: right;">* NOTE 3</p> <p>(During playback, machine operates normally.)</p>	<p><b>SLED SERVO</b></p> <p>Check SLED mechanism operation</p>

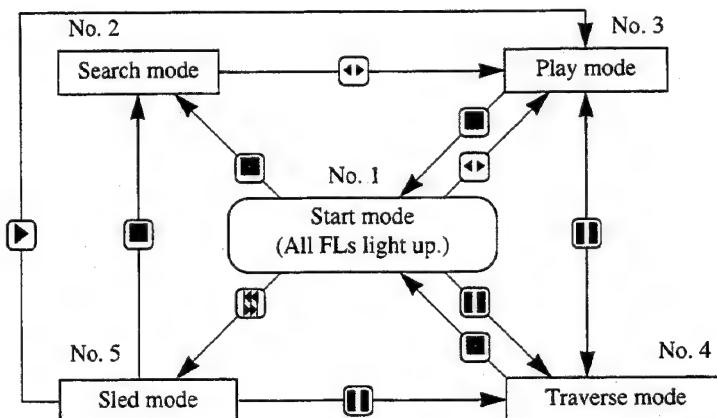
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

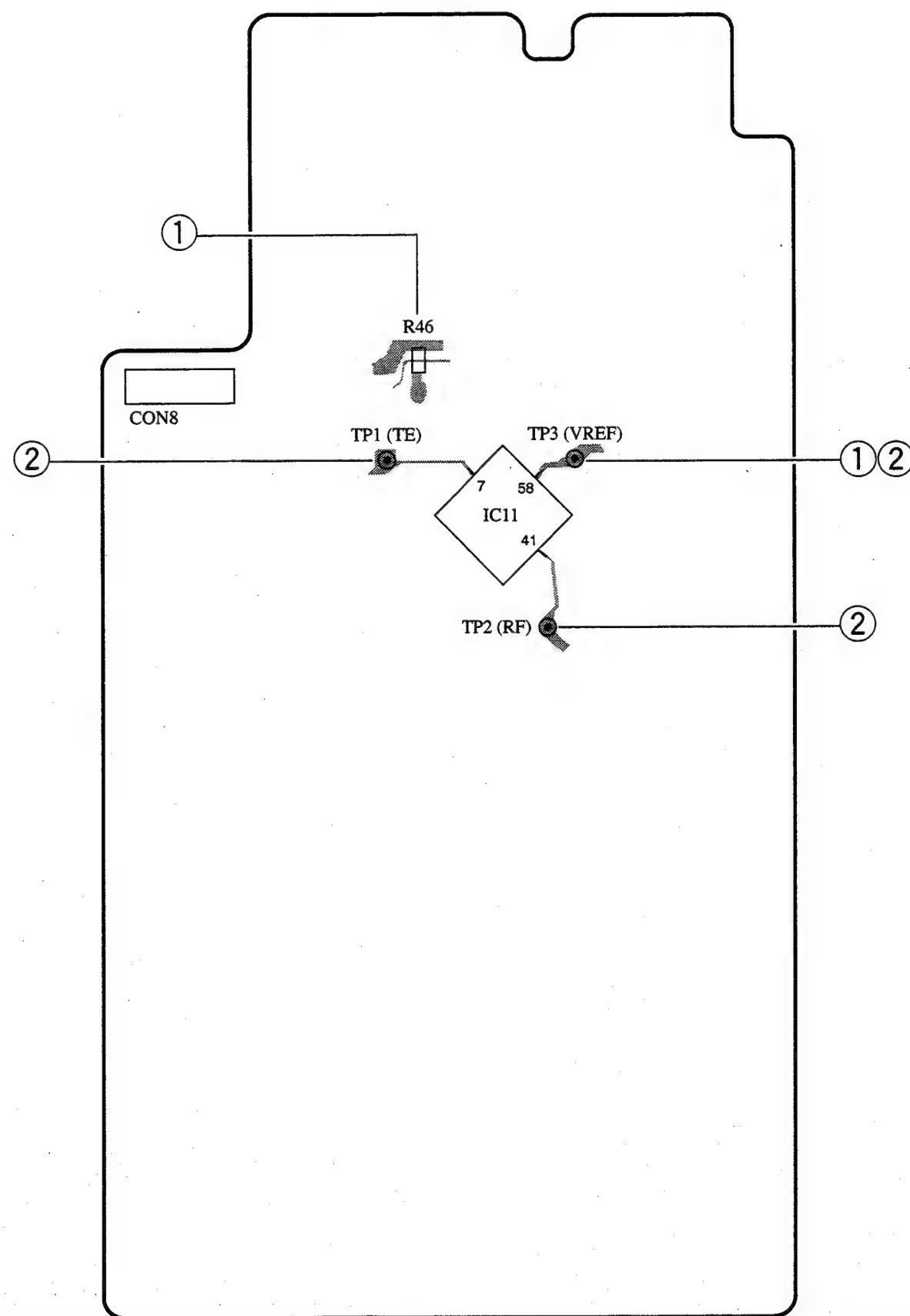
### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

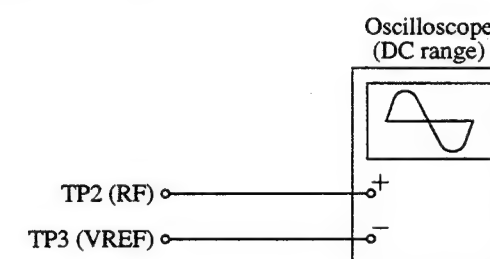


**A** 3CD C.B (PATTERN SIDE)

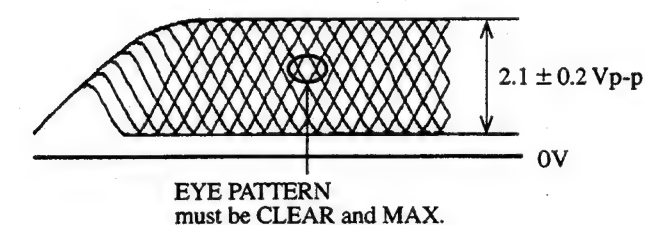
Note:

- Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.
- During adjustment, connect (⊖) pin of an oscilloscope to TP3 (VREF).

## 1. RF waveform Check

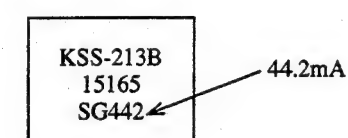


- 1) Connect an oscilloscope to test points TP2 (RF) and TP3 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second program.
- 4) Confirm that the waveform at oscilloscope has amplitude of  $2.1 \text{ Vp-p}$ , and clear wedge area in its center.



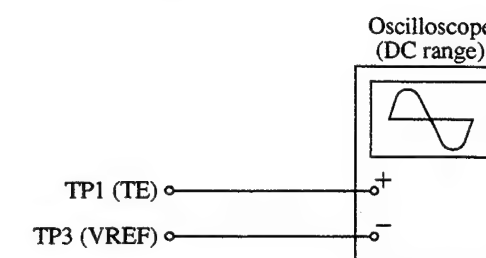
VOLT/DIV: 50mV  
TIME/DIV: 0.5μS

Note: The current of the laser signal can be checked with the voltages on both sides of R46 (voltage across  $10\Omega$ ). The difference for the specified value shown on the label must be within  $\pm 6.0\text{mA}$ .

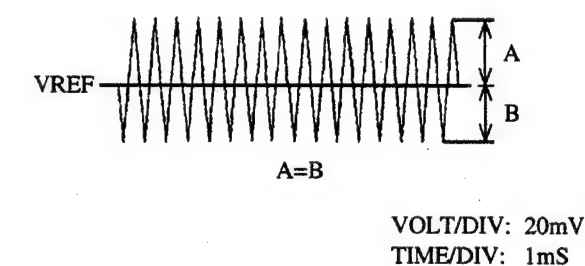


$$\text{Laser current } I_{op} = \frac{\text{Voltage across R46}}{10\Omega}$$

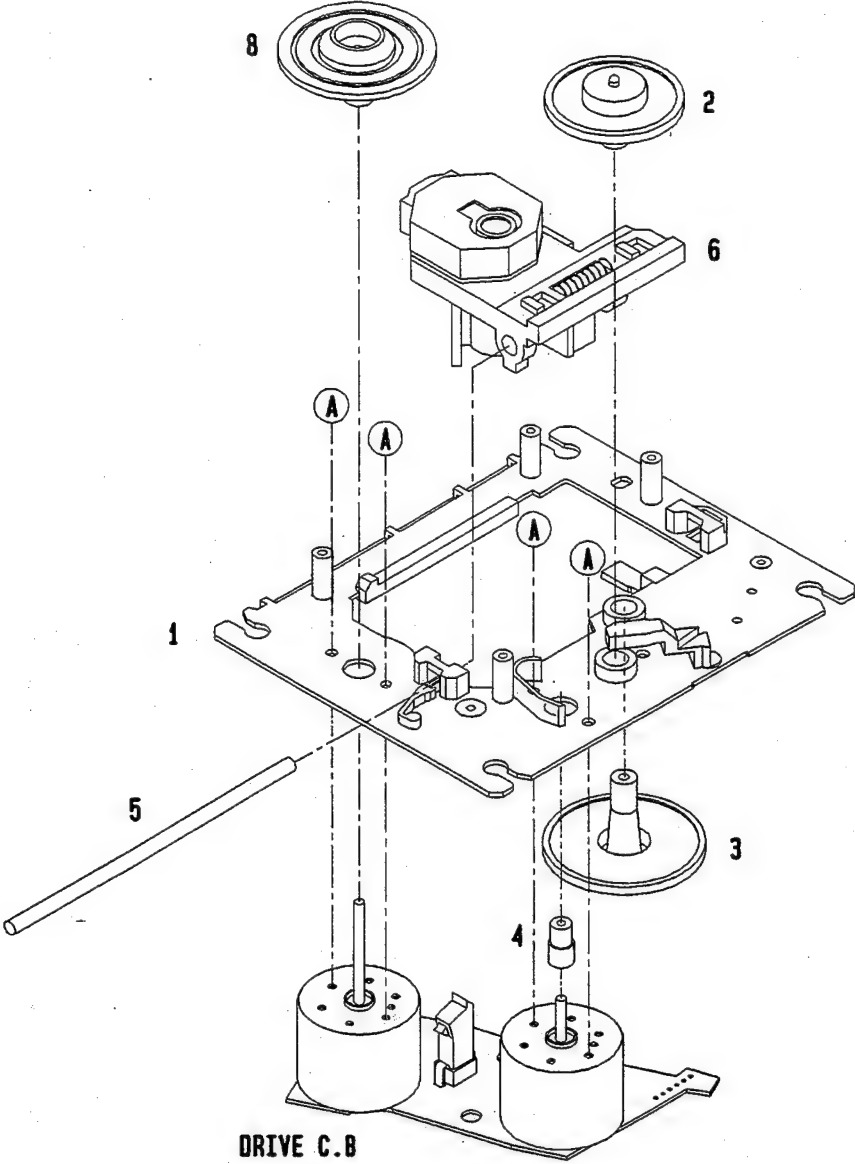
## 2. Tracking Balance Check



- 1) Connect an oscilloscope to test points TP1 (TE) and TP3 (VREF).
- 2) Start up the CD test mode.
- 3) Insert the test disc TCD-782(YEDS-18) and enter the traverse mode of the CD test mode.
- 4) Confirm that the traverse waveform on an oscilloscope is vertically symmetrical as shown in the figure below.
- 5) After confirming the waveform, release the CD test mode.



CD MECHANISM EXPLODED VIEW 1 / 1 (3ZG-2 C2N <Z>)



CD MECHANISM PARTS LIST 1 / 1 (3ZG-2 C2N <Z>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	83-ZG2-202-71K		O-SERT S ASSY,S	6	87-070-445-010		PICK-UP,KSS-213B
2	83-ZG2-204-419		GEAR,A	8	83-ZG2-233-019		TURN TABLE,A5
3	83-ZG2-205-219		GEAR,B	A	87-261-032-219		SCREW V+2-3
4	83-ZG2-220-01K		GEAR MOTOR 2				
5	83-ZG2-207-119		SHAFT,SLIDE				

USE MODEL LIST

- CX-NAV70 (NSX-AV70)

CX-NAV700 (NSX-AV700)

CX-NAV71 (NSX-AV71)

CX-NAV80 (NSX-AV80)

CX-NAV800 (NSX-AV800)

CX-NAV90 (NSX-AV90)

CX-NAV900 (NSX-AV900)

CX-NK300 (NSX-K300)

CX-NK700 (NSX-K700)

CX-NK77 (NSX-K77)

CX-NK80 (NSX-K80)

CX-NK90 (NSX-K90)

CX-NV300 (NSX-V300)

CX-NV3000 (NSX-V3000)

CX-NV3001 (NSX-V3001)

CX-NV390 (NSX-V390)

CX-NV500 (NSX-V500)

CX-NV700 (NSX-V700)

CX-NV705 (NSX-V705)

CX-NV710 (NSX-V710)

CX-NV715 (NSX-V715)
- CX-NV720 (NSX-V720)

CX-NV770 (NSX-V770)

CX-NV800 (NSX-V800)

CX-NV8000 (NSX-V8000)

CX-NV8080 (NSX-V8080)

CX-NV820 (NSX-V820)

CX-NV900 (NSX-V900)

CX-NV9000 (NSX-V9000)

CX-NV9090 (NSX-V9090)

CX-NV915 (NSX-V915)

CX-NV929 (NSX-V929)

FD-NAKH8 (NSX-AKH8)

FD-NH8 (NSX-AVH8)

FD-NH8 (NSX-AVH8)

FD-NH80 (NSX-AVH80)

FD-NH9 (NSX-AVH9)

FD-NH9 (NSX-AVH9)

FD-NH90 (NSX-AVH90)

FD-SNAKH8 (NSX-AKH8)

FD-SNH9 (NSX-AVH9)

## REFERENCE NAME LIST

### ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER
サージサプレッサ	SERGESUPPRESSOR
セラコン	CAP, CERA

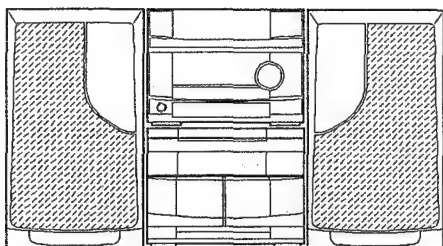
### MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL
ジグアーム	ARM, SHAFT
ジグガイド	GUIDE, SHAFT
ストラップ	STRAP
トクナベ	S-SCREW
ヒンジ	HINGE
ヒンジビス	S-SCREW
ビスセレート	SCREW, SERRART

# aiwa



## NSX-H9 NSX-H90



COMPACT DISC STEREO  
CASSETTE RECEIVER

- BASIC TAPE MECHANISM: 2ZM-3MK2 PR2N
- BASIC CD MECHANISM: 4ZG-1WRNM

- TYPE HE, HR, LH(H9)  
U(H90)

- If requiring information about the CD mechanism, see Service Manual of 4ZG-1WR.  
(S/M Code No. 09-965-128-10T ) *V16442*

SYSTEM	AMPLIFIER	CASSETTE DECK CD PLAYER	REMOTE CONTROLLER	SPEAKERS
NSX-H9	RX-NH9	FD-NH9	RC-T501	SX-ANH9
NSX-H90	RX-NH90	FD-NH90	RC-T501	SX-ANH90

SERVICE MANUAL

*1939*

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## SPECIFICATIONS

### STEREO RECEIVER RX-NH9/NH90

#### FM tuner section

Tuning range	87.5 MHz to 108 MHz
Usable sensitivity (IHF)	13.2 dBf
Antenna terminals	75 ohms (unbalanced)

#### AM tuner section

Tuning range	530 kHz to 1710 kHz (10 kHz step) 531 kHz to 1602 kHz (9 kHz step)
Usable sensitivity	350 $\mu$ V/m
Antenna	Loop antenna

#### Amplifier section

Power output	LH: 120 W+120 W (6 ohms, T.H.D.10 %, 1 kHz) HR, HE: Rated 95 W+95 W (6 ohms, T.H.D.1 %, 1 kHz) Reference: 120 W+120 W (6 ohms, T.H.D.10 %, 1 kHz) *without connecting to the SURROUND SPEAKERS U: 100 watts per channel, Min. RMS at 6 ohms, from 50 Hz to 20 kHz, with no more than 1 % Total Harmonic Distortion 0.1 % (60 W, 1 kHz, 6 ohms)
Total harmonic distortion Inputs	VIDEO 1/MD IN: 200 mV (adjustable) VIDEO 2/AUX IN: 200 mV (adjustable) MIC 1, MIC 2: 1 mV (10 kohms) REC OUT: 200 mV SUPER WOOFER: LH: 2.6 V HR, HE, U: 2.4 V SPEAKERS: accept speakers of 6 ohms or more SURROUND SPEAKERS: accept speakers of 16 ohms or more PHONES (stereo jack): accepts headphones of 32 ohms or more

#### Outputs

#### General

Power requirements	LH, HR, HE: 120 V/220-230 V/240 V AC, switchable 50/60 Hz U: 120 V AC, 60 Hz
Power consumption	130 W (System total 150 W)
Dimensions of main unit (W x H x D)	260x198x333.5 mm (10 1/4 x 7 7/8 x 13 1/4 in.)
Weight of main unit	LH, U: 5.8 kg (12 lbs 14 oz.) HR, HE: 6.5 kg

### COMPACT DISC/STEREO CASSETTE DECK FD-NH9/NH90

#### Cassette deck section


Track format	4 tracks, 2 channels stereo
Frequency response	Metal tape: 50 Hz-17000 Hz CrO <sub>2</sub> tape: 50 Hz-16000 Hz Normal tape: 50 Hz-15000 Hz LH, HR, HE: 70 dB (Dolby C NR ON, Metal tape peak level) U: 75 dB (Dolby C NR ON, Metal tape peak level) AC bias Deck 1: Playback head x 1 Deck 2: Recording/playback/erase head x 1
Signal-to-noise ratio	
Recording system Heads	

#### Compact disc player section

Laser	Semiconductor laser ( $\lambda=780$ nm)
D-A converter	1 bit dual
Signal-to-noise ratio	85 dB (1 kHz, 0 dB)
Harmonic distortion	0.03 % (1 kHz, 0 dB)
Wow and flutter	Unmeasurable
General	
Dimensions (W x H x D)	260 x 203 x 321.5 mm (10 1/4 x 8 x 12 3/4 in.)
Weight	3.9 kg (8 lbs 10 oz.)

### Speaker system SX-ANH9/ANH90

Cabinet type	4 way, bass reflex with surround speaker (magnetic sealed type)
Speakers	Woofer: 140 mm (5 5/8 in.) cone type Mid-range: 80 mm (3 1/4 in.) cone type Tweeter: 50 mm (2 in.) cone type Super tweeter: 20 mm (13/16 in.) ceramic type Surround speaker: 80 mm (3 1/4 in.) cone type
Impedance	Front speaker: 6 ohms Surround speaker: 16 ohms
Output sound pressure level	LH, HR, HE: 87 dB/W/m U: 88 dB/W/m
Dimensions (W x H x D)	250 x 405 x 286 mm (9 7/8 x 16 x 11 3/8 in.)
Weight	5 kg (11 lbs)

- Design and specifications are subject to change without notice.
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- The word "BBE" and the "BBE symbol" are trademarks of BBE Sound, Inc. Under license from BBE Sound, Inc.

MODEL NO.

## RX-NH9/NH90

## ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF.NO	PART NO.	カリ NO.	DESCRIPTION	REF.NO	PART NO.	カリ NO.	DESCRIPTION
IC				C104	87-010-235-089		CAP,E 470-16 SME
	87-A20-069-049		C-IC,BA3842F	C105	87-010-235-089		CAP,E 470-16 SME
	87-A20-067-040		C-IC,M65849FP	C106	87-016-285-089		CAP,E 47-100 SME
	87-A20-063-019		IC,STK-419-140<U>	C107	87-010-407-089		CAP,E 33-50 SME
	87-A20-191-019		IC,STK-419-140A<EXCEPT U>	C108	87-010-407-089		CAP,E 33-50 SME
	87-017-888-089		IC,NJM4558MD	C109	87-010-263-089		CAP,E 100-10 SME 5X11
	87-017-915-089		IC,BU4094BCF	C112	87-010-382-089		CAP,E 22-25 SME
	87-017-804-019		IC,BU4052BC	C113	87-010-403-089		CAP,E 3.3-50 SME
	87-A20-083-019		IC,BA3835S	C116	87-012-140-089		C-CAP,S 470P-50 CH
	87-A20-107-019		IC,BA3836	C121	87-012-368-089		C-CAP,S 0.1-50 F
	87-017-914-019		IC,BU4094 BC	C122	87-012-368-089		C-CAP,S 0.1-50 F
	87-A20-056-019		IC,BA3880S	C123	87-012-368-089		C-CAP,S 0.1-50 F
	87-070-127-119		IC,LC72131D	C124	87-012-368-089		C-CAP,S 0.1-50 F
	87-017-714-119		IC,LA1836L	C125	87-010-263-089		CAP,E 100-10 SME 5X11
	86-NT1-618-010		IC,LC 866424V-5A62	C126	87-010-197-089		C-CAP,S 0.01 B
	87-070-083-019		IC,GP1U281X	C127	87-010-197-089		C-CAP,S 0.01 B
TRANSISTOR				C131	87-010-186-089		C-CAP,S 4700P-50 B
	89-213-702-019		TR,2SB1370E	C132	87-010-186-089		C-CAP,S 4700P-50 B
	89-109-352-089		TR,2SA935Q	C152	87-010-260-089		CAP,E 47-25 SME
	87-026-610-089		TR, KPC3198GR	C171	87-016-658-099		CAP,E 4700-35V SME
	89-332-665-089		TR,2SC3266GR	C172	87-016-658-099		CAP,E 4700-35V SME
	89-337-221-389		C-TR,2SC3722K	C173	87-012-368-089		C-CAP,S 0.1-50F
	89-324-122-089		C-TR,2SC2412R	C174	87-012-368-089		C-CAP,S 0.1-50F
	89-110-372-089		C-TR,2SA1037R	C175	87-012-368-089		C-CAP,S 0.1-50F
	89-110-373-089		C-TR,2SA1037S	C176	87-012-368-089		C-CAP,S 0.1-50F
	87-026-210-089		C-TR,DTCL44EK T147	C220	87-010-194-089		C-CAP,S 0.047-25 F
	89-421-141-289		C-TR,2SD2114K,UV	C221	87-010-545-089		CAP,E 0.22-50 SME
	87-026-609-089		TR, KTA1266GR	C222	87-010-545-089		CAP,E 0.22-50 SME
	89-109-373-089		TR,2SA1037S	C225	87-012-157-089		C-CAP,S 330P-50 CH
	89-112-965-089		TR,2SA1296GR	C226	87-012-157-089		C-CAP,S 330P-50 CH
	87-026-228-089		C-TR DTA124EK	C227	87-010-402-089		CAP,E 2.2-50 SME
	89-113-187-089		TR,2SA1318TU	C228	87-010-402-089		CAP,E 2.2-50 SME
	89-406-555-089		TR,2SD655E	C229	87-010-382-089		CAP,E 22-25 SME
	89-333-266-089		C-TR,2SC3326B	C230	87-010-382-089		CAP,E 22-25 SME
	87-026-214-089		TR,DTA114YS	C231	87-018-099-089		CAP,TC-U 3.9P-50 CH
	87-026-211-089		C-TR,DTA144EK T147	C232	87-018-099-089		CAP,TC-U 3.9P-50 CH
	89-327-125-089		C-TR,2SC2712GR	C233	87-010-196-089		C-CAP,S 0.1-25 F
	89-327-143-089		C-TR,2SC2714 (O)	C234	87-010-196-089		C-CAP,S 0.1-25 F
	87-026-226-089		C-TR,DTA143EK	C235	87-010-196-089		C-CAP,S 0.1-25 F
	89-505-434-589		C-FET,2SK543(4/5)	C236	87-010-196-089		C-CAP,S 0.1-25 F
DIODE				C240	87-010-197-089		C-CAP,S 0.01-25 B
	87-A40-116-069		DIODE,RS403L-B-D-51	C245	87-012-368-089		C-CAP,S 0.1-50 F
	87-A40-115-069		DIODE,SAD102	C500	87-010-405-089		CAP,E 10-50 SME
	87-070-274-089		DIODE,1N4003SEM	C501	87-010-213-089		C-CAP,S 0.015-25 B<HEJ,HRJ>
	87-020-027-089		C-DIODE,1SS184	C501	87-010-198-089		C-CAP,S 0.022-25 B<LH,U>
	87-020-125-089		C-DIODE,1SS181	C502	87-010-213-089		C-CAP,S 0.015-25 B<HEJ,HRJ>
	87-020-465-089		DIODE,1SS133	C502	87-010-198-089		C-CAP,S 0.022-25 B<LH,U>
	87-017-174-089		ZENER,HZS11A3L	C503	87-010-179-089		C-CAP,S 1200P-50 B<HEJ,HRJ>
	87-017-146-089		ZENER,HZS30-2	C503	87-010-183-089		C-RES,S 2700P-50 B<LH,U>
	87-001-290-089		ZENER,HZS5C1	C504	87-010-179-089		C-CAP,S 1200P-50 B<HEJ,HRJ>
	87-017-148-089		ZENER,HZS6A1L	C504	87-010-183-089		C-RES,S 2700P-50 B<LH,U>
	87-001-731-089		ZENER HZS6C2L	C505	87-010-546-089		CAP,E 0.33-50 SME
	87-001-911-089		ZENER,UTZJ4.7A (TAPG)	C506	87-010-546-089		CAP,E 0.33-50 SME
MAIN C.B				C507	87-010-196-089		C-CAP,S 0.1-25 F
C101	87-016-520-099		CAP E 3300-65<U>	C508	87-010-196-089		C-CAP,S 0.1-25 F
C101	87-016-657-099		CAP,E 3300-71<EXCEPT U>	C530	87-010-197-089		C-CAP,S 0.01-25 B
C102	87-016-520-099		CAP E 3300-65<U>	C531	87-010-183-089		C-CAP,S 2700P-50 B
C102	87-016-657-099		CAP,E 3300-71<EXCEPT U>	C532	87-010-194-089		C-CAP,S 0.047-25 F
				C533	87-010-196-089		C-CAP,S 0.1-25 F
				C534	87-010-263-089		CAP,E 100-10 SME 5X11
				C535	87-010-404-089		CAP,E 4.7-50 SME
				C536	87-010-404-089		CAP,E 4.7-50 SME
				C537	87-010-545-089		CAP,E 0.22-50 SME
				C539	87-010-194-089		C-CAP,S 0.047-25 F

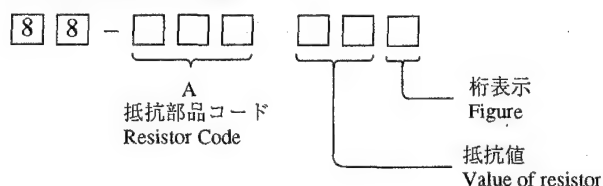
REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
C540	87-010-384-089		CAP,E 100-25 SME	C795	87-010-194-089		C-CAP,S 0.047-25 F
C541	87-010-404-089		CAP,E 4.7-50 SME	C796	87-010-403-089		CAP,E 3.3-50 SME
C542	87-010-404-089		CAP,E 4.7-50 SME	C801	87-018-134-089		CAP,TC-U0.01-16 Y
C560	87-012-156-089		C-CAP,S 220P-50 CH	C802	87-018-134-089		CAP,TC-U0.01-16 Y
C561	87-012-156-089		C-CAP,S 220P-50 CH	C813	87-018-134-089		CAP,TC-U0.01-16 Y
C562	87-012-156-089		C-CAP,S 220P-50 CH	C814	87-010-197-089		C-CAP,S 0.01-25 B
C563	87-012-142-089		C-CAP,S 0.33-16 F	C815	87-018-134-089		CAP,TC-U 0.01-16 Y
C564	87-010-196-089		C-CAP,S 0.1-25 F	C816	87-018-134-089		CAP,TC-U 0.01-16 Y
C565	87-018-209-089		CAP,TC-U 0.1-50 F	C817	87-010-197-089		C-CAP,S 0.01-25 B
C566	87-010-196-089		C-CAP,S 0.1-25 F	C818	87-010-197-089		C-CAP,S 0.01-25 B
C601	87-010-184-089		C-CAP,S 3300P-50 B	C819	87-010-197-089		C-CAP,S 0.01-25 B
C602	87-010-184-089		C-CAP,S 3300P-50 B	C820	87-010-408-089		CAP,E 47-50 SME
C603	87-010-405-089		CAP,E 10-50 SME	C821	87-010-197-089		C-CAP,S 0.01-25 B
C604	87-010-405-089		CAP,E 10-50 SME	C822	87-010-197-089		C-CAP,S 0.01-25 B
C605	87-010-260-089		CAP,E 47-25 SME	C823	87-010-197-089		C-CAP,S 0.01-25 B
C606	87-010-101-089		CAP,E 220-16 SME	C828	87-010-196-089		C-CAP,S 0.1-25 F
C607	87-010-188-089		C-CAP,S 6800P-50 B	C829	87-010-196-089		C-CAP,S 0.1-25 F
C608	87-010-188-089		C-CAP,S 6800P-50 B	C940	87-010-197-089		C-CAP,S 0.01-25 B
C609	87-018-127-089		CAP,TC-U 470P-50 B	C946	87-010-401-089		CAP,E 1-50 SME
C610	87-018-127-089		CAP,TC-U 470P-50 B	C960	87-010-196-089		C-CAP,S 0.1-25 F
C611	87-010-197-089		C-CAP,S 0.01-25 B	C961	87-010-152-089		C-CAP,S 8P-50 CH
C612	87-010-197-089		C-CAP,S 0.01-25 B	CF801	87-008-261-019		FLTR,SFE10.7MA5-A
C613	87-010-195-089		C-CAP,S 0.068-25 F	CF802	87-008-261-019		FLTR,SFE10.7MA5-A
C614	87-010-195-089		C-CAP,S 0.068-25 F	FF801	A8-62A-190-039		62A-1FEUNM
C615	87-010-404-089		CAP,E 4.7-50 SME	J252	87-A60-020-019		JACK,6.3 BLK W/SW
C616	87-010-404-089		CAP,E 4.7-50 SME	J253	87-099-802-019		JACK,PIN 3P BRW
C617	87-010-404-089		CAP,E 4.7-50 SME	J253	87-099-802-019		JACK,PIN 3P BRW
C618	87-010-404-089		CAP,E 4.7-50 SME	J254	87-033-240-019		TERMINAL,SP 4P32SV1-05
C701	87-010-381-089		CAP,E 330-16 SME	J254	87-033-240-019		TERMINAL,SP 4P32SV1-05
C702	87-010-404-089		CAP,E 4.7-50 SME	J801	87-033-235-019		TERMINAL,ANT (H)
C703	87-010-197-089		C-CAP,S 0.01-25 B	L101	87-003-383-019		COIL,1UH-S
C704	87-010-197-089		C-CAP,S 0.01-25 B	L102	87-003-383-019		COIL,1UH-S
C711	87-010-263-089		CAP,E 100-10 SME 5X11	L701	87-003-293-019		COIL,TRAP MPX
C712	87-010-196-089		C-CAP,S 0.1-25 F	L702	87-003-293-019		COIL,TRAP MPX
C715	87-010-197-089		C-CAP,S 0.01-25 B	L741	87-A50-015-019		COIL,FM DET(TOK)
C716	87-010-197-089		C-CAP,S 0.01-25 B	L742	87-A90-051-019		FLTR,CFAZ-450(TOK)
C722	87-010-152-089		C-CAP,S 8P-50 CH	L770	87-003-102-089		COIL,10UH
C723	87-010-178-089		C-CAP,S 1000P-50 B	L832	87-003-098-089		COIL,2.2UH
C725	87-010-178-089		C-CAP,S 1000P-50 B	L981	86-NF4-665-019		AM PACK 1(TOK)
C727	87-010-196-089		C-CAP,S 0.1-25 F	R105	87-022-600-089		RES,M/F 0.1-2W J
C728	87-010-248-089		CAP,E 220-10 SME	R106	87-022-600-089		RES,M/F 0.1-2W J
C760	87-010-197-089		C-CAP,S 0.01-25 B	RY101	87-045-389-019		RELAY,OSA-SS-212DM5
C761	87-010-196-089		C-CAP,S 0.1-25 F	RY102	87-045-382-019		RELAY,OUAZ-SH-112L
C770	87-010-405-089		CAP,E 10-50 SME	SFR722	87-024-352-089		SFR,4.7K DIA6 H
C771	87-010-405-089		CAP,E 10-50 SME	TC701	87-011-253-089		TRIMER,30P LAR
C772	87-010-194-089		C-CAP,S 0.047-25 F	W304	87-064-142-019		HOLD WIRE 15-1.5
C773	87-010-196-089		C-CAP,S 0.1-25 F	X703	84-508-618-019		VIB,CER CSB 456 F15
C774	87-010-263-089		CAP,E 100-10 SME 5X11	X721	87-030-372-019		VIB,XTAL 7.2MHZ
C775	87-010-405-089		CAP,E 10-50 SME				
C776	87-010-197-089		C-CAP,S 0.01-25 B				
C777	87-010-400-089		CAP,E 0.47-50 SME	FRONT C.B			
C778	87-010-401-089		CAP,E 1-50 SME	C101	87-010-401-049		CAP,E 1-50 SME
C779	87-010-401-089		CAP,E 1-50 SME	C102	87-010-401-049		CAP,E 1-50 SME
C780	87-010-197-089		C-CAP,S 0.01-25 B	C103	87-010-182-089		C-CAP,S 2200P-50 B
C781	87-010-405-089		CAP,E 10-50 SME	C104	87-010-182-089		C-CAP,S 2200P-50 B
C782	87-010-405-089		CAP,E 10-50 SME	C105	87-010-545-049		CAP E 0.22-50 SME
C787	87-010-184-089		C-CAP,S 3300P-50 B	C106	87-010-545-049		CAP E 0.22-50 SME
C788	87-010-184-089		C-CAP,S 3300P-50 B	C107	87-010-993-089		C-CAP,S 0.056-25 B
C789	87-010-179-089		C-CAP,S 1200P-50 B	C108	87-010-993-089		C-CAP,S 0.056-25 B
C790	87-010-179-089		C-CAP,S 1200P-50 B	C109	87-012-393-089		C-CAP,S 0.22-16,R,X
C791	87-010-401-089		CAP,E 1-50 SME	C110	87-012-393-089		C-CAP,S 0.22-16,R,X
C792	87-010-180-089		C-CAP,S 1500P-50 B	C111	87-010-401-049		CAP,E 1-50 SME
C793	87-010-189-089		C-CAP,S 8200P-50 B	C112	87-010-260-049		CAP,E 47-25 SME
C794	87-010-408-089		CAP,E 47-50 SME	C113	87-010-405-049		CAP,E 10-50 SME

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
C114	87-010-406-049		CAP,E 22-50 SME	LED431	87-070-198-089		LED,SLP736A-81-S-T1
C115	87-010-196-089		C-CAP,S 0.1-25 F	LED432	87-070-198-089		LED,SLP736A-81-S-T1
C401	87-010-196-089		C-CAP,S 0.1-25 F	LED433	87-070-198-089		LED,SLP736A-81-S-T1
C402	87-010-196-089		C-CAP,S 0.1-25 F	LED434	87-070-198-089		LED,SLP736A-81-S-T1
C450	87-010-112-049		CAP,E 100-16	LED435	87-070-198-089		LED,SLP736A-81-S-T1
C470	87-010-112-049		CAP,E 100-16	LED436	87-A40-188-089		LED,SLZ736A-17-S-T2
C501	87-010-322-089		C-CAP,S 100P-50 CH	LED437	87-A40-188-089		LED,SLZ736A-17-S-T2
C502	87-010-196-089		C-CAP,S 0.1-25 F	S920	87-A90-095-089		SW,TACT EVQ11G04M
C503	87-010-196-089		C-CAP,S 0.1-25 F	S921	87-A90-095-089		SW,TACT EVQ11G04M
C504	87-010-196-089		C-CAP,S 0.1-25 F	S922	87-A90-095-089		SW,TACT EVQ11G04M
C505	87-010-196-089		C-CAP,S 0.1-25 F	S923	87-A90-095-089		SW,TACT EVQ11G04M
C506	87-010-196-089		C-CAP,S 0.1-25 F	S924	87-A90-095-089		SW,TACT EVQ11G04M
C601	87-010-196-089		C-CAP,S 0.1-25 F	S925	87-A90-095-089		SW,TACT EVQ11G04M
C602	87-010-545-049		CAP,E 0.22-50 SME	S926	87-A90-095-089		SW,TACT EVQ11G04M
C603	87-010-321-089		C-CAP,S 82P-50 CH	S927	87-A90-095-089		SW,TACT EVQ11G04M
C604	87-010-196-089		C-CAP,S 0.1-25 F	S928	87-A90-095-089		SW,TACT EVQ11G04M
C605	87-010-196-089		C-CAP,S 0.1-25 F	S932	87-A90-095-089		SW,TACT EVQ11G04M
C608	87-010-177-089		C-CAP,S 820P-50 SL	S933	87-A90-095-089		SW,TACT EVQ11G04M
C609	87-016-251-049		CAP,E220-16 SMG	S934	87-A90-095-089		SW,TACT EVQ11G04M
C610	87-010-405-049		CAP,E 10-50 SME	S935	87-A90-095-089		SW,TACT EVQ11G04M
C611	87-010-405-049		CAP,E 10-50 SME	S936	87-A90-095-089		SW,TACT EVQ11G04M
C612	87-010-406-049		CAP,E 22-50 SME	VR101	83-SP2-612-019		VR,10KB SQ11
C613	87-010-401-049		CAP,E 1-50 SME	VR601	87-A90-124-019		VR,RTRY 10KA L20
C615	87-010-186-089		C-CAP,S 4700P-50 B				
C801	87-010-555-049		CAP,E 100-10 GAS				
C802	87-010-074-080		CAP,E 4.7-35 5L	MVR C.B			
C803	87-010-494-049		CAP,E 1-50 GAS	C201	87-010-405-089		CAP,E 10-50 SME
C804	87-A10-189-049		CAP,E 220-10	C202	87-010-405-089		CAP,E 10-50 SME
C805	87-010-196-089		C-CAP,S 0.1-25 F	C203	87-010-404-089		CAP,E 4.7-50 SME
C806	87-010-196-089		C-CAP,S 0.1-25 F	C204	87-010-404-089		CAP,E 4.7-50 SME
C821	87-010-312-089		C-CAP,S 15P-50 CH	C205	87-010-263-089		CAP,E 100-10 SME 5X11
C822	87-010-180-089		C-CAP,S 1500P-50 B	C206	87-010-263-089		CAP,E 100-10 SME 5X11
C823	87-010-498-049		CAP,E 10-16 GAS	C207	87-010-318-089		C-CAP,S 47P-50 CH
C824	87-010-302-080		C-CAP,S 270P-50 CH	C208	87-010-318-089		C-CAP,S 47P-50 CH
C825	87-010-322-089		C-CAP,S 100P-50 CH	C209	87-016-461-089		C-CAP,S 0.47-25 F
C901	87-010-405-049		CAP,E 10-50 SME	C210	87-010-197-089		C-CAP,S 0.01-25 B
C902	87-010-405-049		CAP,E 10-50 SME	C211	87-010-179-089		C-CAP,S 1200P-50 B
C903	87-010-408-049		CAP,E 47-50 SME	C212	87-010-196-089		C-CAP,S 0.1-25 F
FC001	88-904-201-219		FF-CABLE 4P 1.25	C213	88-707-789-819		CAP, M 0.33-50 J TF
FL801	86-NT1-636-019		FL,BJ451GK	C214	88-707-789-819		CAP, M 0.33-50 J TF
J601	82-NF7-630-019		JACK,3.5 MO	C215	87-010-196-089		C-CAP,S 0.1-25 F
J602	82-NF7-630-019		JACK,3.5 MO	C216	87-010-187-089		C-CAP,S 5600P-50 B
L801	87-005-165-089		COIL,1uH MLAL03<U>	C217	87-010-182-089		C-CAP,S 2200P-50 B
L820	87-A50-052-019		COIL,CLOCK 5.76MHZ T1	C218	87-012-393-089		C-CAP,S 0.22-16,R,K
LED401	87-070-199-089		LED,SLP738F-81-S-T1	C219	87-010-194-089		C-CAP,S 0.047-25 F
LED402	87-070-199-089		LED,SLP738F-81-S-T1	C220	87-010-182-089		C-CAP,S 2200P-50 B
LED403	87-070-199-089		LED,SLP738F-81-S-T1	C221	87-010-196-089		C-CAP,S 0.1-25 F
LED404	87-070-199-089		LED,SLP738F-81-S-T1	C222	87-010-179-089		C-CAP,S 1200P-50 B
LED405	87-070-199-089		LED,SLP738F-81-S-T1	C223	87-010-177-089		C-CAP,S 820P-50 SL
LED406	87-070-199-089		LED,SLP738F-81-S-T1	C280	87-010-196-089		C-CAP,S 0.1-25 F
LED407	87-070-199-089		LED,SLP738F-81-S-T1	C285	87-010-263-089		CAP,E 100-10 SME 5X11
LED408	87-070-199-089		LED,SLP738F-81-S-T1	C286	87-010-384-089		CAP,E 100-25 SME
LED409	87-070-199-089		LED,SLP738F-81-S-T1	C301	87-010-402-049		CAP,E 2.2-50 SME
LED410	87-070-199-089		LED,SLP738F-81-S-T1	C302	87-010-402-049		CAP,E 2.2-50 SME
LED411	87-070-201-089		LED,SLP9118C-51-S-T1	C303	87-010-404-049		CAP,E 4.7-50 SME
LED412	87-070-201-089		LED,SLP9118C-51-S-T1	C304	87-010-404-049		CAP,E 4.7-50 SME
LED413	87-070-201-089		LED,SLP9118C-51-S-T1	L201	87-005-481-089		COIL,47UH J FLR50
LED414	87-070-201-089		LED,SLP9118C-51-S-T1	MVR281	86-NT1-633-019		VR,MOT 50KBX2 -L20
LED415	87-070-201-089		LED,SLP9118C-51-S-T1				
LED421	87-070-198-089		LED,SLP736A-81-S-T1	TRAY C.B			
LED422	87-070-198-089		LED,SLP736A-81-S-T1	S937	87-A90-095-089		SW,TACT EVQ11G04M
LED423	87-070-198-089		LED,SLP736A-81-S-T1	S938	87-A90-095-089		SW,TACT EVQ11G04M
LED424	87-070-198-089		LED,SLP736A-81-S-T1	S939	87-A90-095-089		SW,TACT EVQ11G04M
LED425	87-070-198-089		LED,SLP736A-81-S-T1				


REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
S940	87-A90-095-089		SW, TACT EVQ11G04M	AC-1 C.B<U>			
S941	87-A90-095-089		SW, TACT EVQ11G04M				
S942	87-A90-095-089		SW, TACT EVQ11G04M	△	87-033-213-089		CLAMP FUSE SMK<U>
S945	87-036-110-019		SW, PUSH SPPB 62	△	82-304-743-019		TERMINAL 1P<U>
S946	87-A90-095-089		SW, TACT EVQ11G04M	△F101	87-035-192-019		FUSE, 4A 250V<U>
				△PT103	86-NT1-607-019		PT, 6NT1-U<U>
S947	87-A90-095-089		SW, TACT EVQ11G04M				
S948	87-A90-095-089		SW, TACT EVQ11G04M	PT-H C.B<EXCEPT U>			
S949	87-A90-095-089		SW, TACT EVQ11G04M				
S950	87-A90-095-089		SW, TACT EVQ11G04M	△	82-304-743-019		TERMINAL 1P<EXCEPT U>
S951	87-A90-095-089		SW, TACT EVQ11G04M	△F101	87-035-192-019		FUSE, 4A 250V<EXCEPT U>
				△PT103	86-NT1-606-019		PT, 6NT1-HR<HEJ, HRJ>
S952	87-A90-095-089		SW, TACT EVQ11G04M	△PT103	86-NT1-609-019		PT, 6NT1-LH<LH>
S953	87-A90-095-089		SW, TACT EVQ11G04M	△SW101	87-036-387-019		SW, SL 1-2-3<EXCEPT U>
S954	87-A90-095-089		SW, TACT EVQ11G04M				
S955	87-036-110-019		SW, PUSH SPPB 62				
AC-2 C.B				MOTOR C.B			
△PR101	87-A90-210-089		PROTECTOR 7A125V251<U>	C970	87-010-263-089		CAP, E 100-10 SME 5X11
△PR101	87-A90-195-089		PROTECTOR 7A125V491<EXCEPT U>	C971	87-010-263-089		CAP, E 100-10 SME 5X11
△PR102	87-A90-210-089		PROTECTOR 7A125V251<U>				
△PR102	87-A90-195-089		PROTECTOR 7A125V491<EXCEPT U>				

# ○ チップ抵抗部品コード / CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

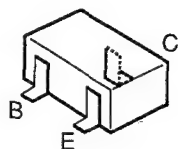


# TRANSISTOR ILLUSTRATION



ECB

2SA1296  
2SA1318  
2SC3266  
2SD655  
KTA1266  
KTC3198



2SA1037  
2SC2412  
2SC2712  
2SC2714  
2SC3326  
2SC3722  
2SD2114  
DTA124EK  
DTA143EK  
DTA144EK  
DTC144EK



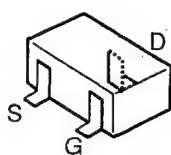
ECB

DTA114YS

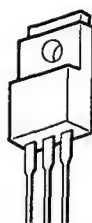


ECB

2SA935



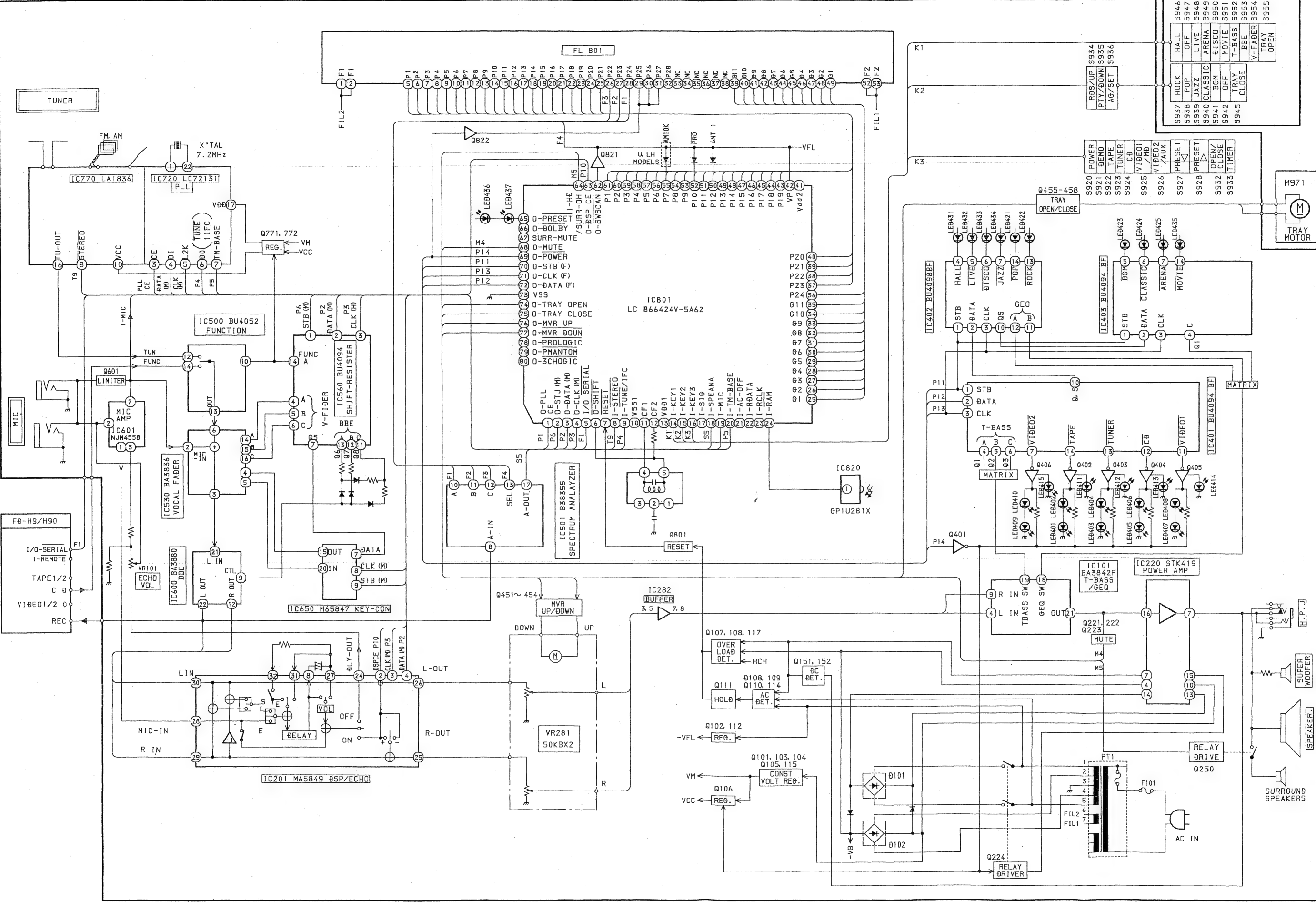
2SK543



BCE

2SB1370

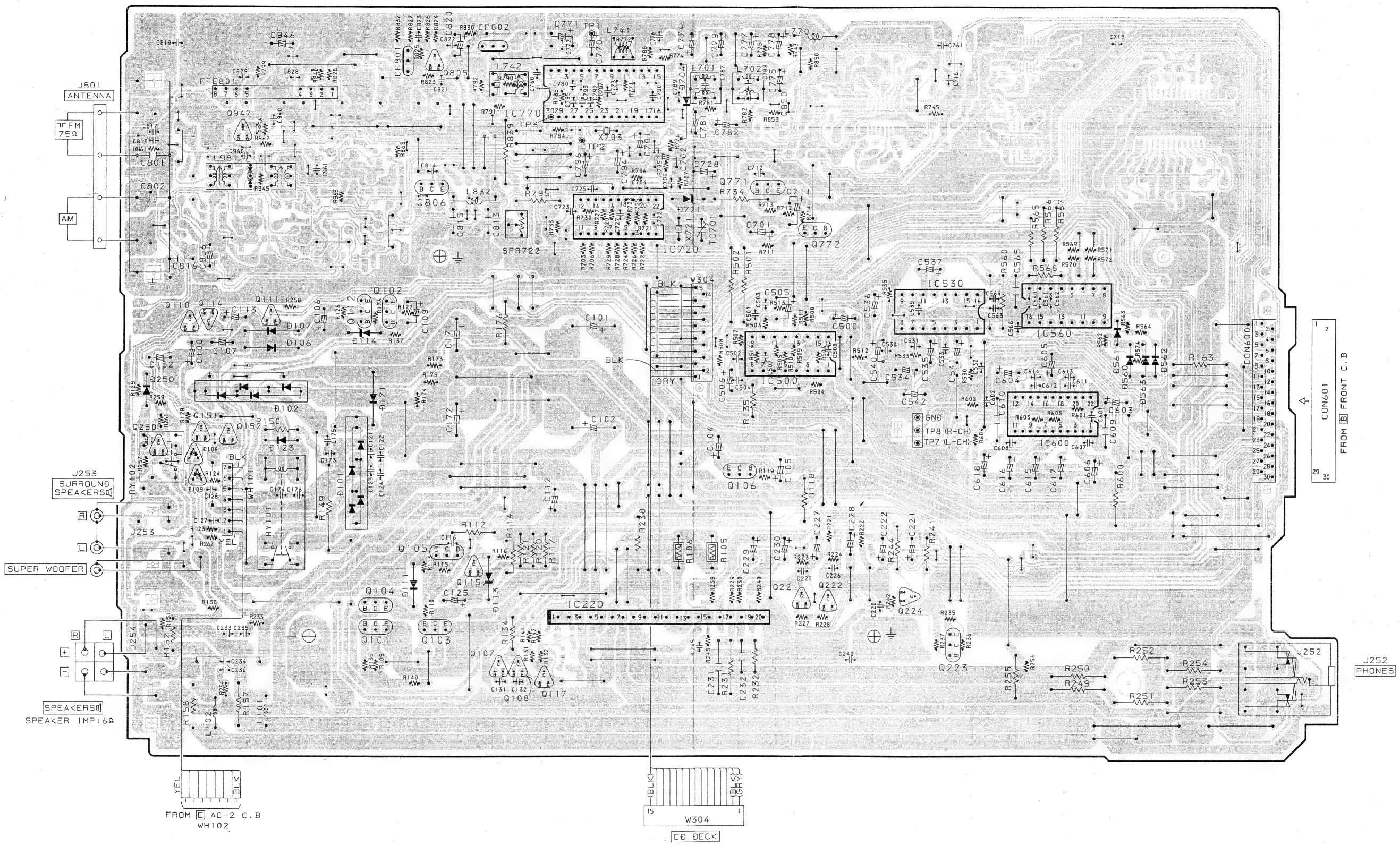
BLOCK DIAGRAM



1 2 3 4 5 6 7 8 9 10 11 12 13 14

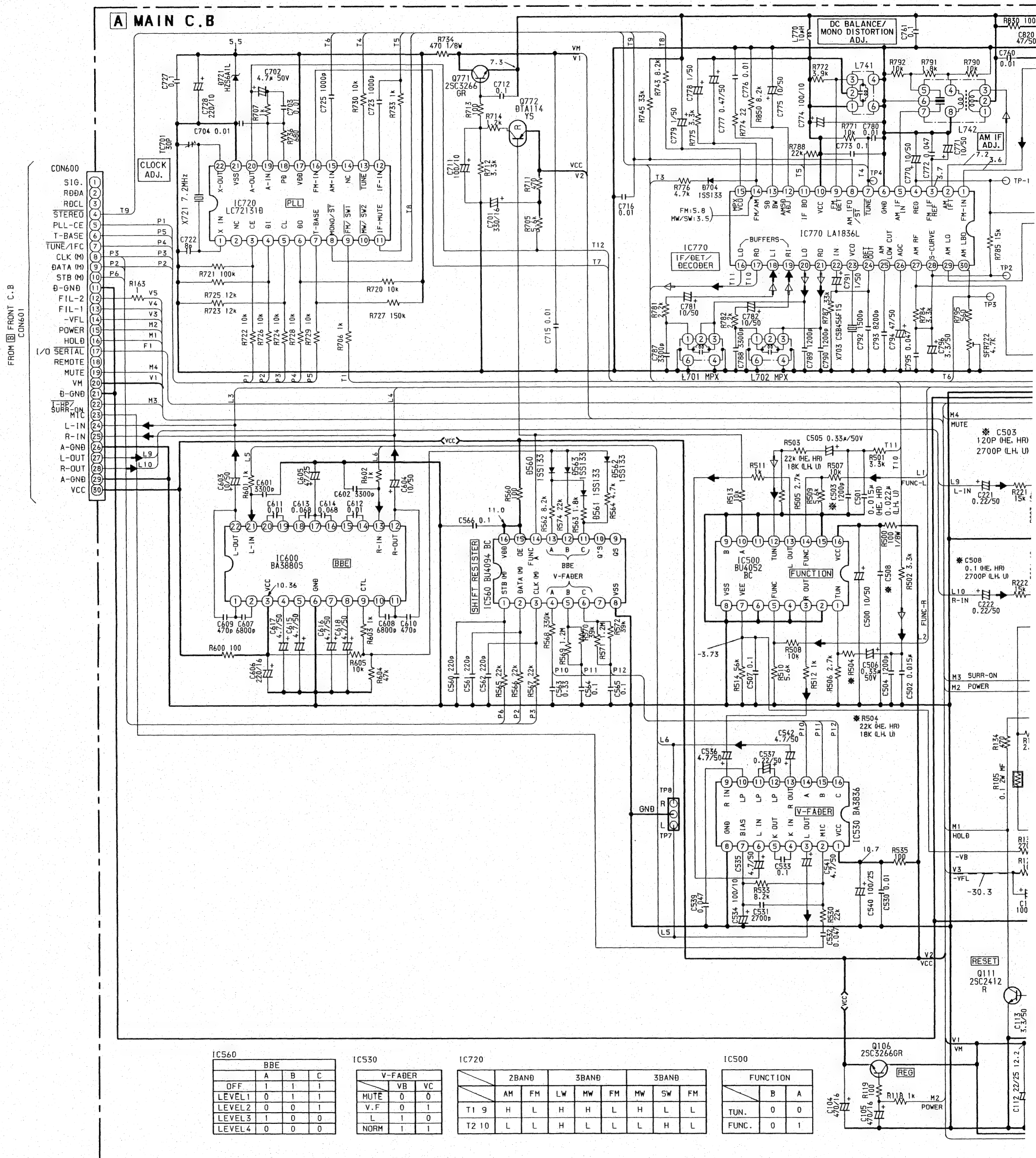
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K

A MAIN C.B





# SCHEMATIC DIAGRAM-1 (MAIN)

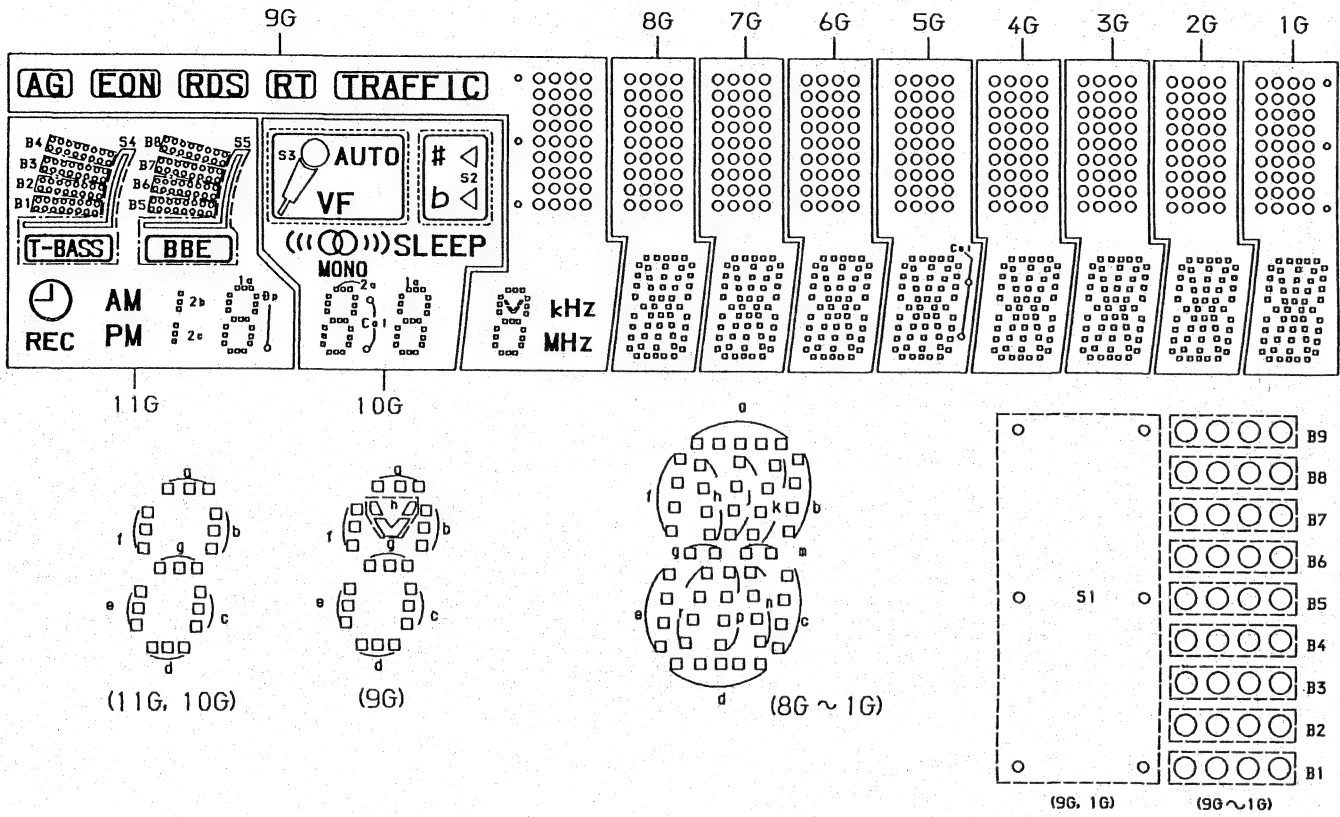






FL (BJ451GK) GRID ASSIGNMENT / ANODE CONNECTION

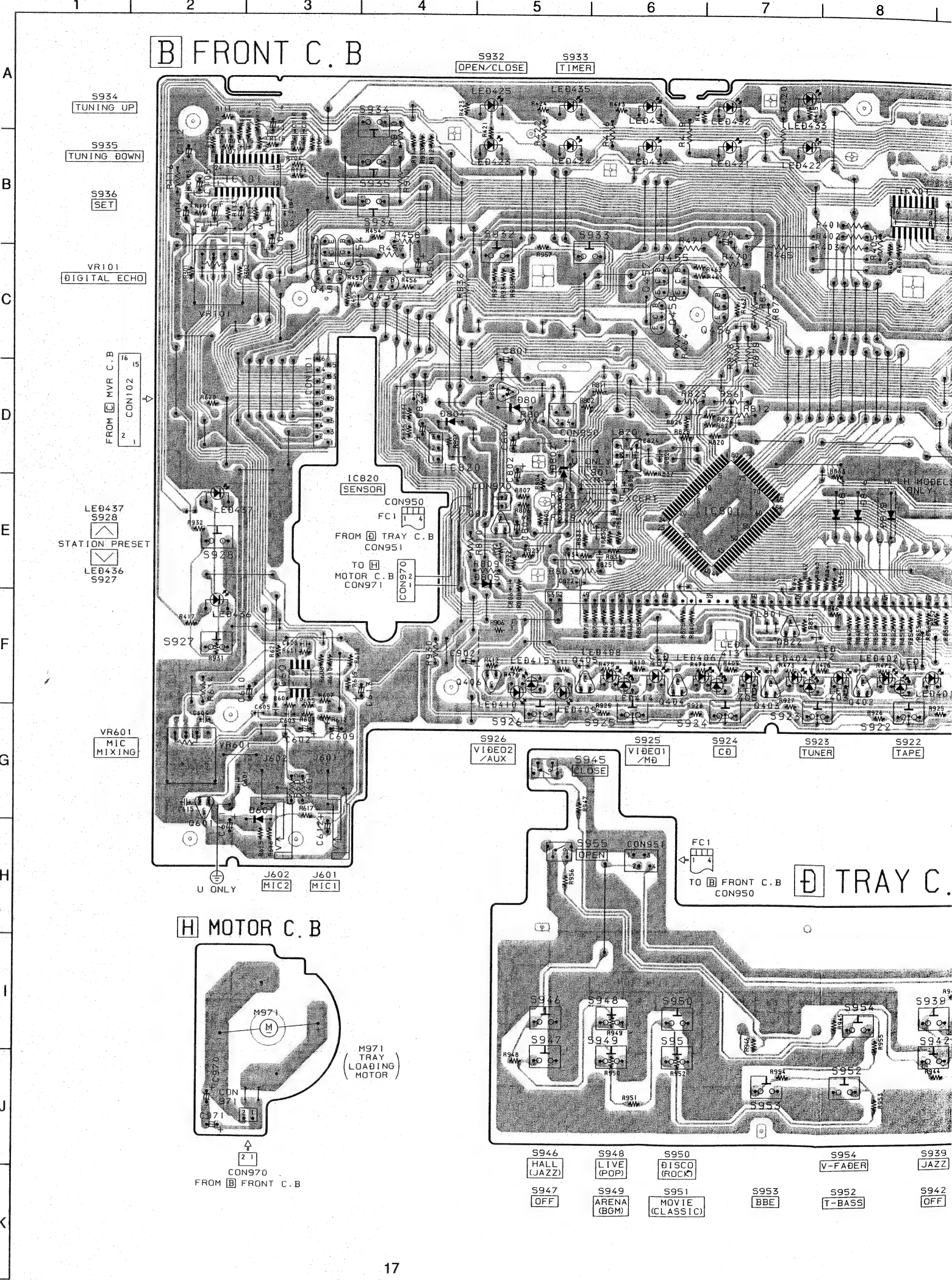
GRID ASSIGNMENT



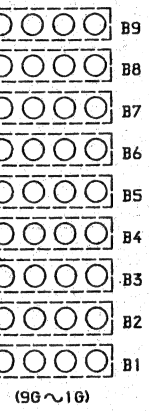
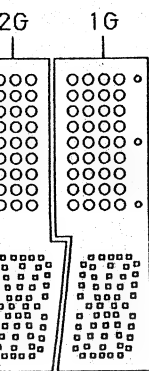
ANODE CONNECTION

	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	2b, 2c	S3	B9	B9	B9	B9	B9	B9	B9	B9	B9
P2	1a	AUTO	B8	B8	B8	B8	B8	B8	B8	B8	B8
P3	1b	High	B7	B7	B7	B7	B7	B7	B7	B7	B7
P4	1f	Low	B6	B6	B6	B6	B6	B6	B6	B6	B6
P5	1g	((( )))	B5	B5	B5	B5	B5	B5	B5	B5	B5
P6	1c	SLEEP	B4	B4	B4	B4	B4	B4	B4	B4	B4
P7	1e	MONO	B3	B3	B3	B3	B3	B3	B3	B3	B3
P8	1d	○	B2	B2	B2	B2	B2	B2	B2	B2	B2
P9	—	2a	B1	B1	B1	B1	B1	B1	B1	B1	B1
P10	—	2b	TRAFFIC	a	a	a	a	a	a	a	a
P11	B8	2f	RT	h	h	h	h	h	h	h	h
P12	B7	2g	RDS	j	j	j	j	j	j	j	j
P13	B6	2c	EQN	k	k	k	k	k	k	k	k
P14	B5	2e	AG	b	b	b	b	b	b	b	b
P15	B4	2d	h	f	f	f	f	f	f	f	f
P16	B3	1a	a	m	m	m	m	m	m	m	m
P17	B2	1b	b	g	g	g	g	g	g	g	g
P18	B1	1f	f	c	c	c	c	c	c	c	c
P19	AM	1g	g	e	e	e	e	e	e	e	e
P20	PM	1c	c	r	r	r	r	r	r	r	r
P21	⌚	1e	e	p	p	p	p	p	p	p	p
P22	REC	1d	d	n	n	n	n	n	n	n	n
P23	—	Col Low	KHz	d	d	d	d	d	d	d	d
P24	⌚p	Col High	MHz	—	—	—	col	—	—	—	—
P25	—	—	S1	—	—	—	—	—	—	—	S1
P26	S4	—	—	—	—	—	—	—	—	—	—
P27	S5	—	—	—	—	—	—	—	—	—	—
P28	—	S2	—	—	—	—	—	—	—	—	—

WIRING-2 (FRONT)







A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K

# B FRONT C.B

S934  
TUNING UP  
S935  
TUNING DOWN  
S936  
SET  
VR101  
DIGITAL ECHO

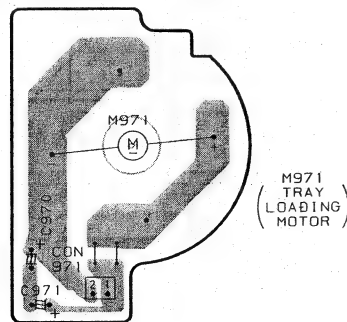
FROM MVR C.B  
CON102

LE0437  
S928  
STATION PRESET  
LE0436  
S927

VR601  
MIC MIXING

U ONLY J602 MIC2 J601 MIC1

## H MOTOR C.B

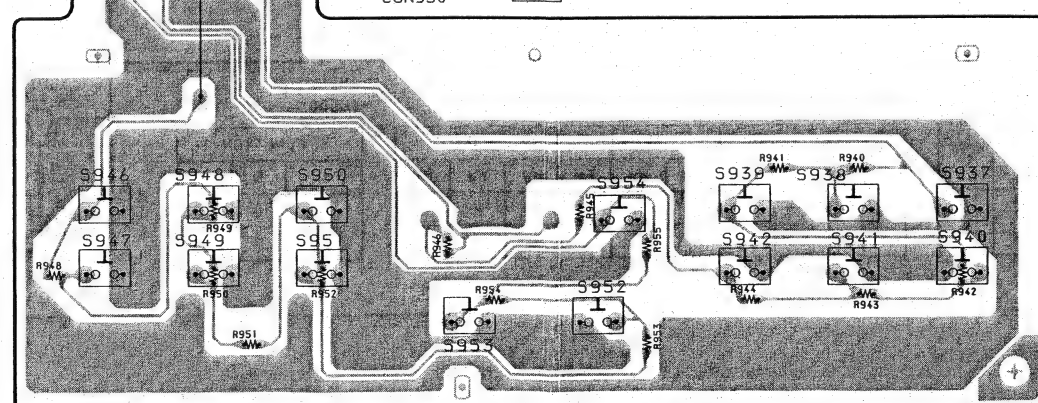


CON970  
FROM B FRONT C.B

S932  
OPEN/CLOSE  
S933  
TIMER

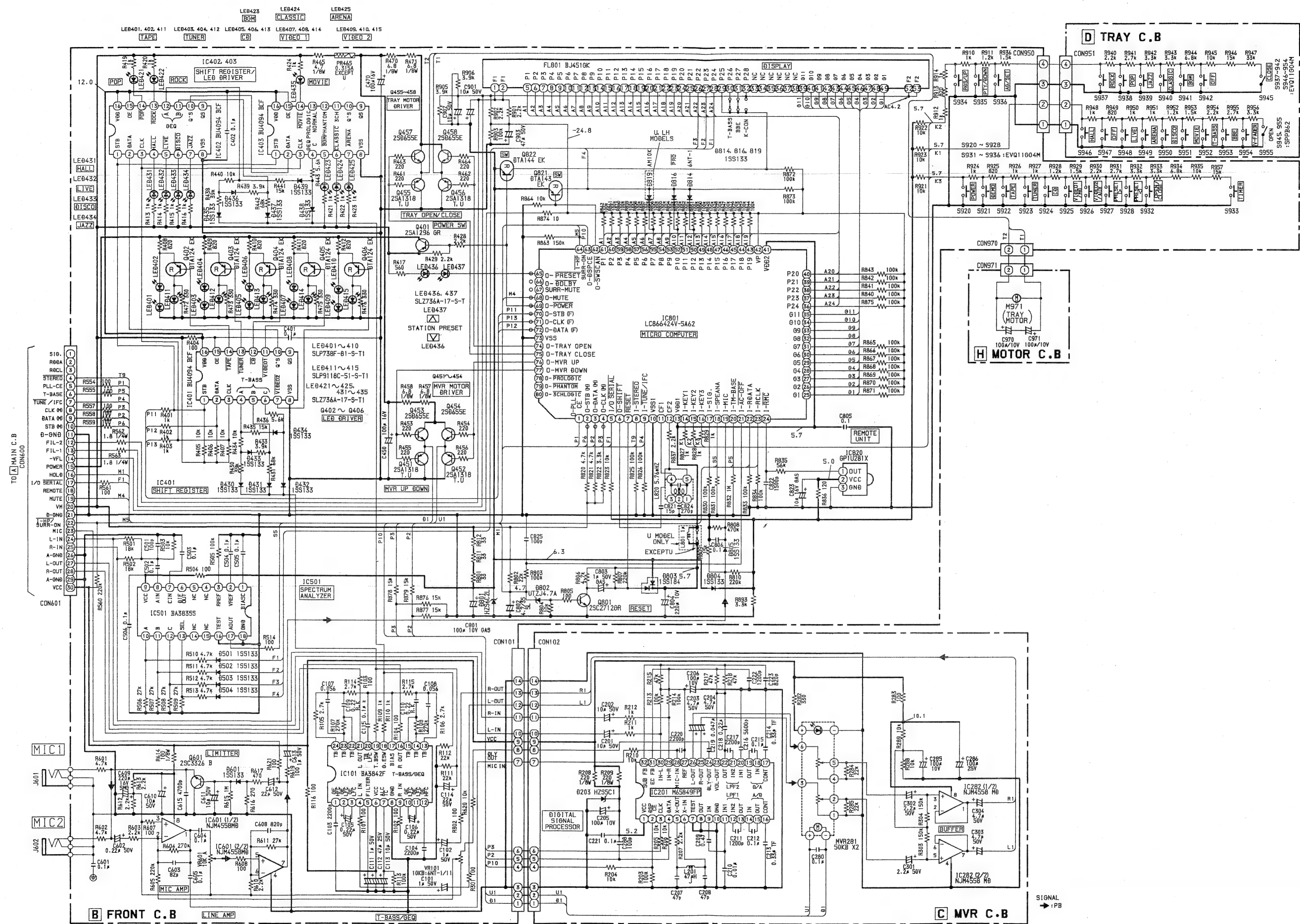
S926  
VIDEO2 /AUX  
S925  
VIDEO1 /HD  
S924  
CD  
S923  
TUNER  
S922  
TAPE  
S921  
DEMO  
S920  
POWER

## D TRAY C.B

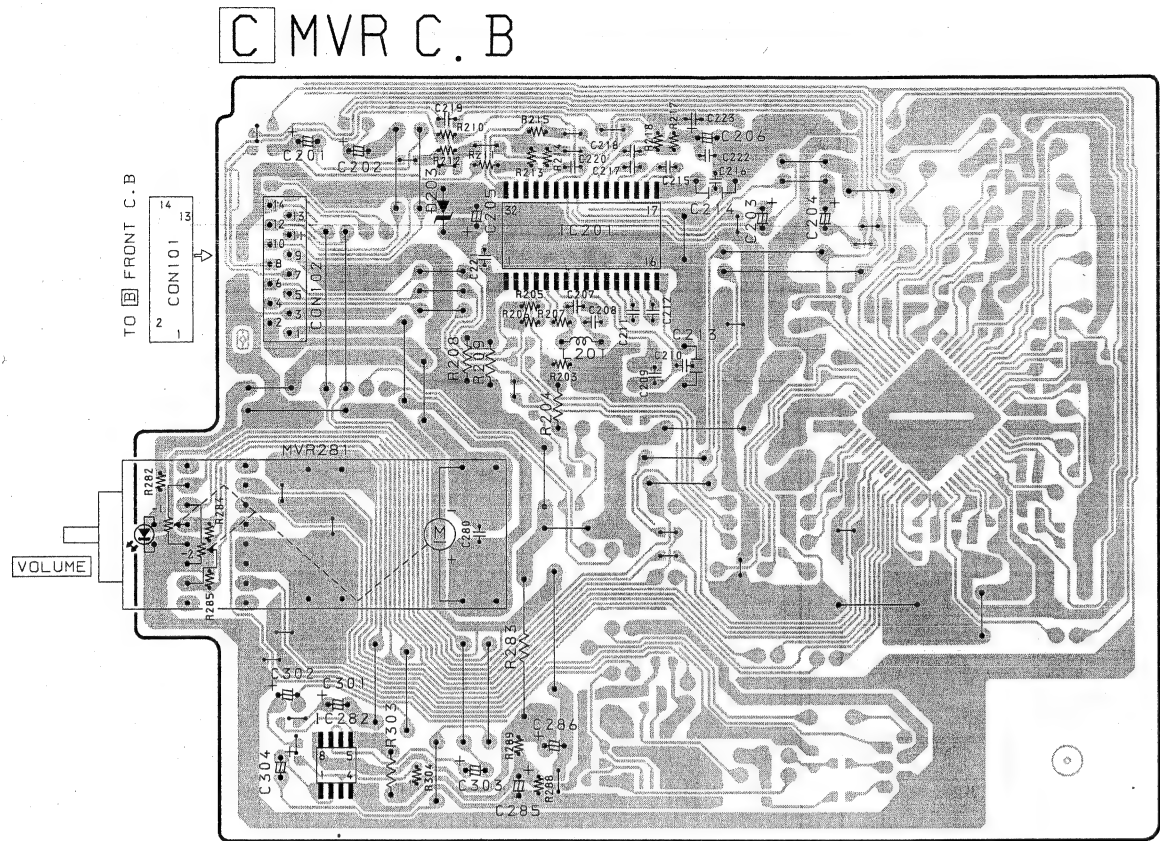


CON600  
TO A MAIN C.B

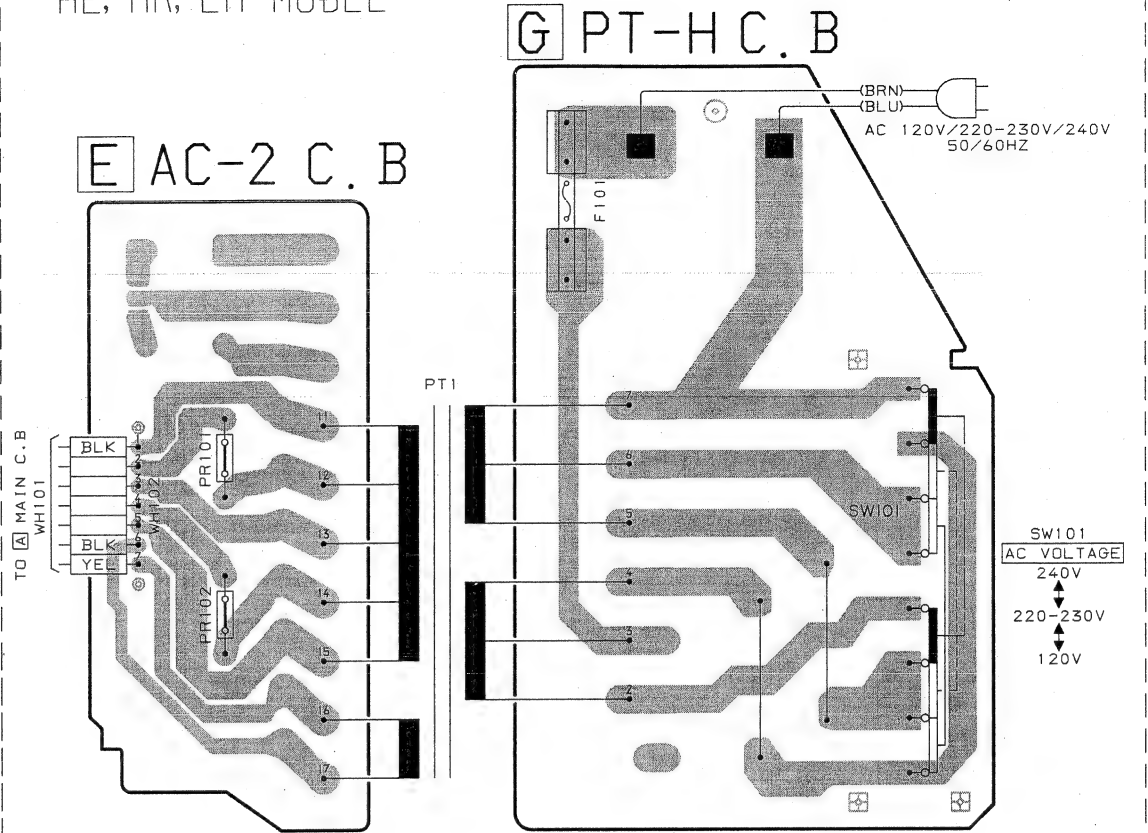
SCHEMATIC DIAGRAM-2 (FRONT)



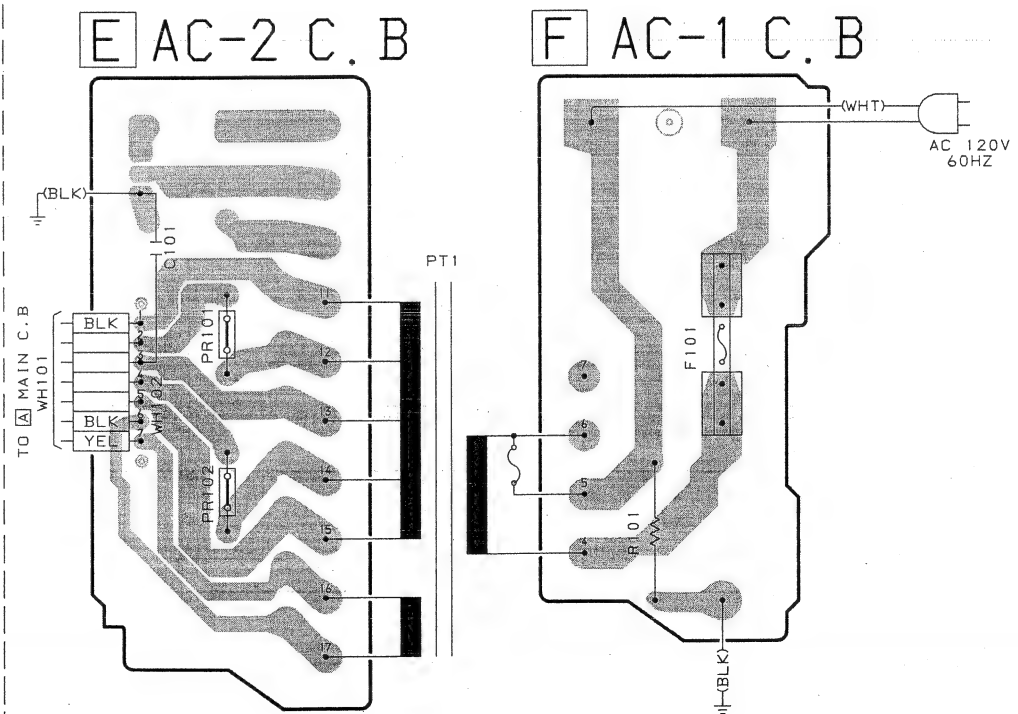




HE, HR, LH MODEL



U MODEL



# IC DESCRIPTION

## IC, LC866424V-5A62

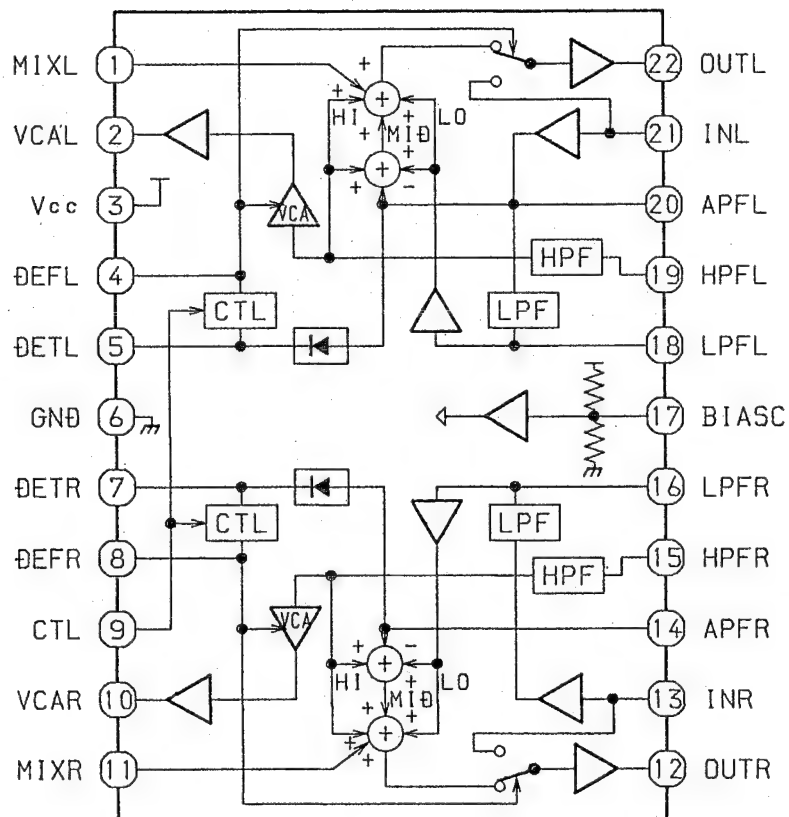
Pin No.	Pin Name	I/O	Description
1	O-PLLCE	O	PLL IC chip enable output.
2	O-STB(M)	O	Main shift register,data latch strobe output.
3	O-DATA(M)	O	Main shift register/PLL/DSP related,data output.
4	O-CLK(M)	O	Main shift register/PLL/DSP related,data transfer clock output.
5	I/O SERIAL	I/O	FD microprocessor,I/O serial.
6	O-SHIFT	O	Microprocessor clock shift output during tuner reception.
7	RESET	I	Reset input(Reset at "L").
8	I-STEREO	I	Tuner stereo sensing input.
9	I-TUNE/IFC	I	Tuner,SD sensing input/IF count serial data input.
10	VSS 1	-	GND.
11	CF 1	-	5.76 MHz oscillator.
12	CF 2	-	5.76 MHz oscillator.
13	VDD 1	-	Power supply input.
14~16	I-KEY 1~3	I	Key 1~Key 3 A/D input.
17	I-SIG	I	Signal level A/D input for RDS.(Not used)
18	I-SPEANA	I	Spectrum analyzer level A/D input.
19	I-MIC	I	Mic level A/D input for auto vocal fader.
20	I-TMBASE	I	Reference clock input for watch(Automatically supporting 8/50/60 Hz).
21	I-AC OFF	I	Power failure sensing input(Hold at"L").
22	I-RDSDA	I	Data input for RDS.(Not used)
23	I-RDSCS	I	Clock input for RDS.(Not used)
24	I-RMC	I	System remote control input(active Low).
25~35	G11~G1	O	FL grid output(G11~G1).
36~40	S24~S20	O	FL segment output(S24~S20).
41	VDD 2	-	Power supply input.
42	VP	-	Power supply for display.
43~48	S19~S14	O	FL segment output(S19~S14).
49	S13	O	FL segment output/Diode input supporting OIRT.
50	S12	O	FL segment output/Diode input supporting.
51	S11	O	FL segment output/Diode input supporting NTSC.
52	S10	O	FL segment output/Diode input supporting PRO.
53	S9	O	FL segment output/Diode input supporting LW.
54	S8	O	FL segment output/Diode input supporting SW.
55	S7	O	FL segment output/Diode input supporting AM 10K.
56	S6	O	FL segment output/Diode input supporting AM STEREO.
57	S5	O	FL segment output/Diode input supporting FM JPN.
58	S4	O	FL segment output/Diode input supporting RDS.
59	S3	I/O	FL segment output/Diode input supporting BBE.
60	S2	I/O	FL segment output/Diode input supporting DSP.
61	S1	I/O	FL segment output/Diode input supporting K-CON.
62	O-SWSCAN	O	CD turntable reverse direction rotation output/SW scan(timing output).



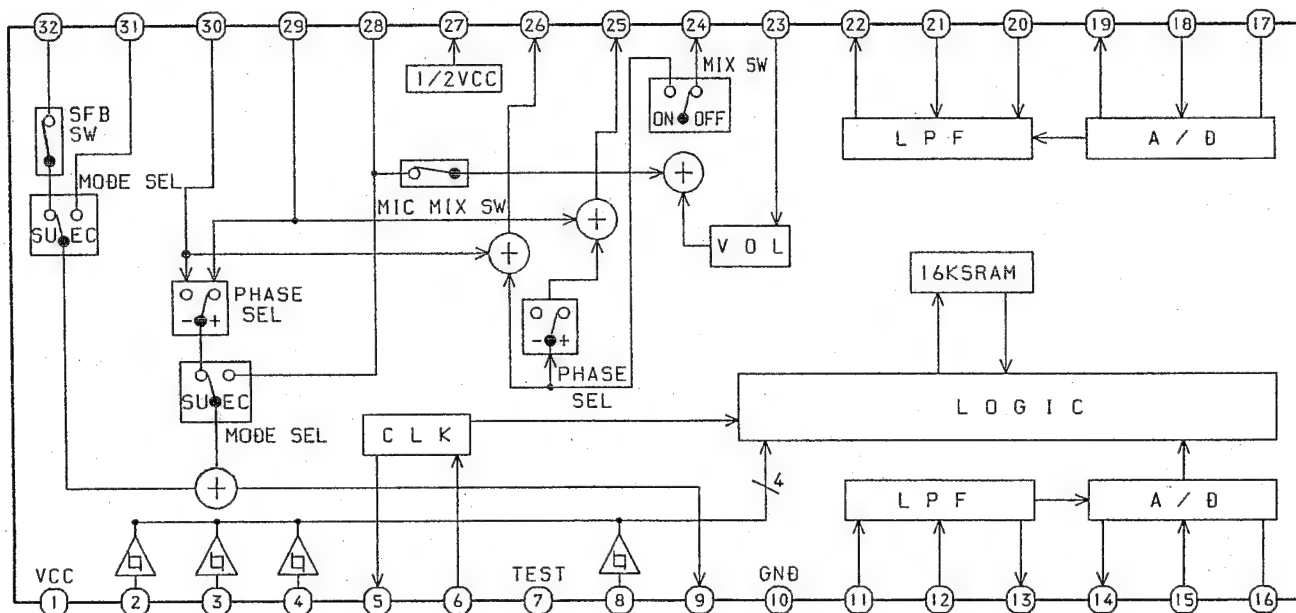
63	O-DSP CE	O	CD turntable forward direction rotation output/DSP chip enable.
64	SUR ON	O	SUR ON(output at"H").
65	O-PRESET LED	O	Preset.
66~67	NC	-	Not used.
68	O-MUTE	O	System Mute ON/OFF output.
69	O-POWER	O	System power supply ON/OFF output.
70	O-STB(F)	O	Front shift register,data latch strobe output.
71	O-CLK(F)	O	Front shift register,data clock output.
72	O-DATA(F)	O	Front shift register,data output.
73	VSS	-	GND.
74	O-TRAY OP	O	CD tray open output.
75	O-TRAY CL	O	CD tray close output.
76	O-VR UP	O	Vol up output.
77	O-VR DN	O	Vol down output.
78~80	NC	-	Not used.

## IC BLOCK DIAGRAM

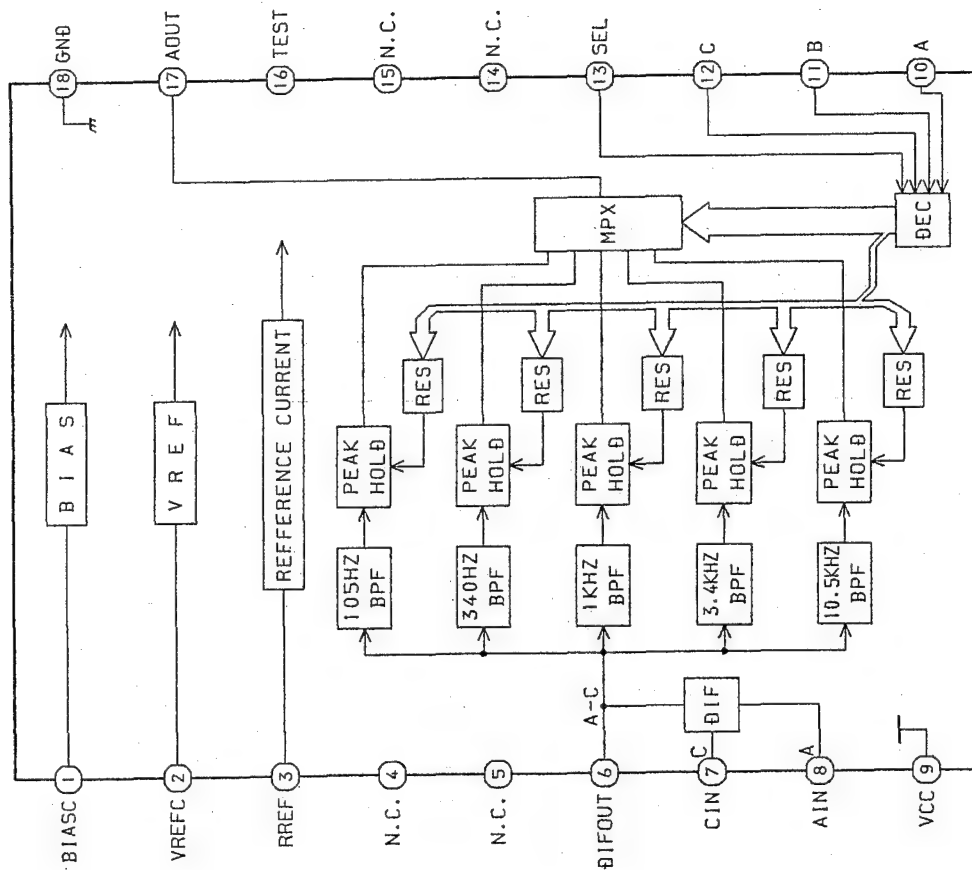
### IC, BA3880S



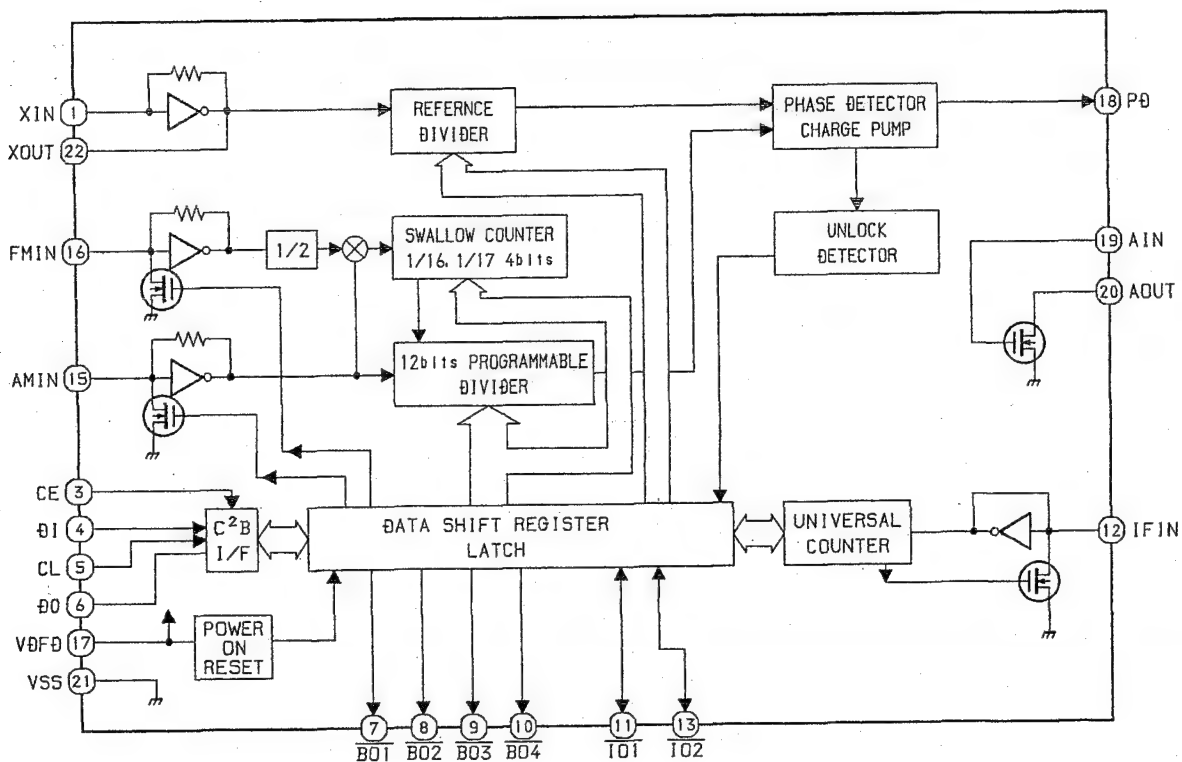
### IC, M65849FP



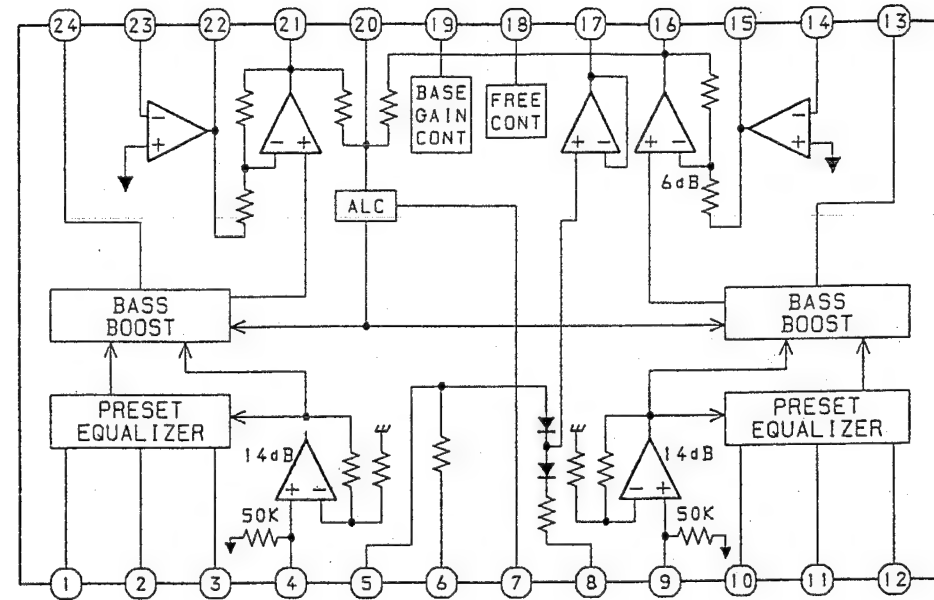
# IC, BA3835S



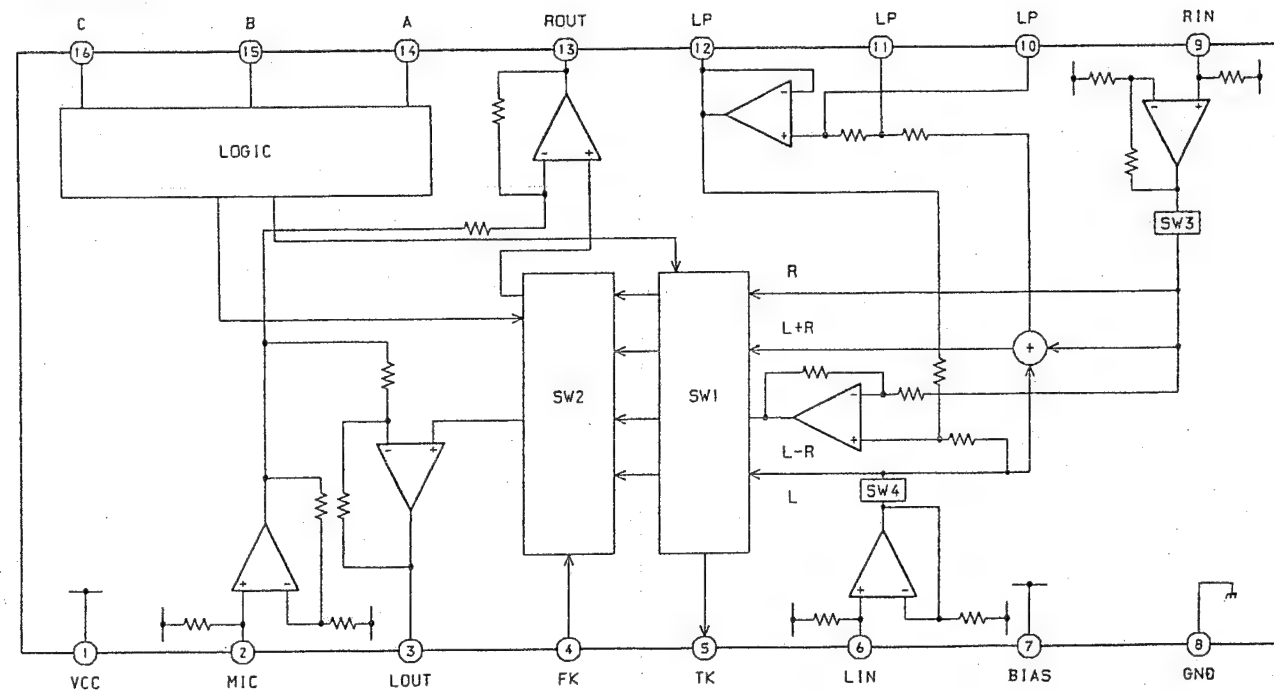
# IC, LC72131D



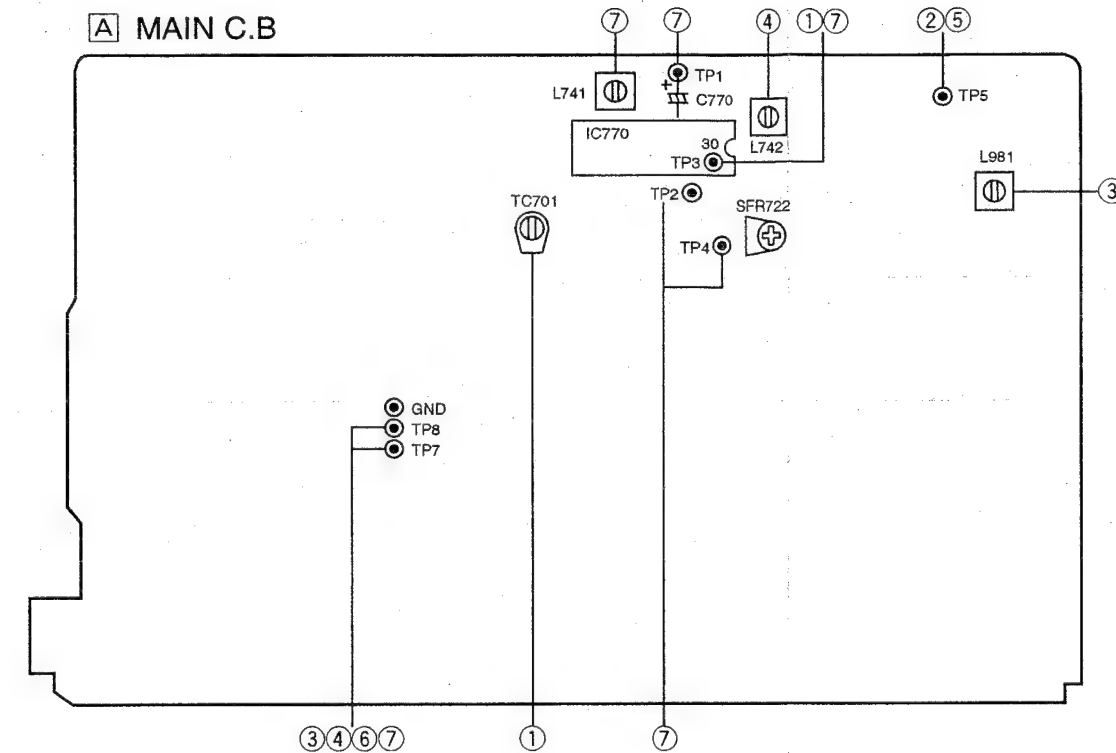
# IC, BA3842F



# IC, BA3836



## ELECTRICAL ADJUSTMENT



## < TUNER SECTION >

- 1. Clock Adjustment**  
 Settings : • Test point : TP3 (CLK)  
 • Adjustment location : TC701  
 Method : Set to MW(AM) 1710kHz and adjust TC701 so that the test point becomes 2160kHz  $\pm$  0.01kHz.
- 2. MW(AM) VT Check**  
 Settings : • Test point : TP5 (VT)  
 Method : Set to MW(AM) 1710kHz and check that the test point is 6.3V  $\pm$  1.0V.
- 3. MW(AM) Tracking Adjustment**  
 Settings : • Test point : TP7 (Lch), TP8 (Rch)  
 • Adjustment location : L981  
 Method : Set to MW(AM) 1000kHz and adjust L981 that the test point becomes maximum.
- 4. MW(AM) IF Adjustment**  
 Settings : • Test point : TP7 (Lch), TP8 (Rch)  
 L742 ..... 450kHz
- 5. FM VT Check**  
 Settings : • Test point : TP5 (VT)  
 Method : Set to FM 87.5MHz and check that the testpoint is more than 1.5V.  
 Then set to FM 108MHz and check that the test point is less than 8.2V.
- 6. FM Tracking Check**  
 Settings : • Test point : TP7 (Lch), TP8 (Rch)  
 Check that the test point is 3~12dB and distortion is less than 3% at FM 98.0MHz.
- 7. DC Balance / Mono Distortion Adjustment**  
 Settings : • Test point : TP1, TP2 (DC balance)  
 TP7, TP8 (Mono Distortion)  
 • Adjustment location : L741  
 • Input level : 54dB  
 Method : Set to FM 98.0MHz and adjust L741 so that the voltage between TP3 and TP4 becomes 0V  $\pm$  0.04V.  
 Next, check that the distortion is less than 1.3%.

<MW(AM) SECTION>	
Sensitivity :	48 ~ 62dB
(S/N 20 dB)	[at 603kHz (HE, HR)]
	[at 600kHz (LH, U)]
	47 ~ 59dB
	[at 999kHz (HE, HR)]
	[at 1000kHz (LH, U)]
	47 ~ 59dB
	[at 1404kHz (HE, HR)]
	[at 1400kHz (LH, U)]
Signal to noise ratio :	More than 36dB
	[at 999kHz (HE, HR)]
	[at 1000kHz (LH, U)]
Distortion :	Less than 1.5%
	[at 999kHz (HE, HR)]
	[at 1000kHz (LH, U)]
Auto stop level :	50dB $\pm$ 10dB
	[at 999kHz (HE, HR)]
	[at 1000kHz (LH, U)]
Intermediate frequency :	450kHz

[illegible]



# MECHANICAL PARTS LIST 1 / 1

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	86-NT1-021-019		KNOB, RTRY VOL	25	87-085-213-019		FOOT, H12.5
2	86-NT1-022-019		REFLECTOR, VOL	26	86-NT1-203-019		GUIDE, FL
3	86-NT1-026-019		RING, VOL	27	86-NT1-202-019		GUIDE, LED
4	86-NT1-028-019		WINDOW, DISPLAY	28	85-NC1-019-019		RING, FOOT
5	86-NT1-006-019		PANEL, FUN	29	86-NT1-023-019		KNOB, RTRY MIC
6	86-NT1-005-019		PANEL, GEQ	30	86-NT1-009-019		KEY, UP/DOWN
7	82-NE8-032-019		BADGE AIWA 27.5	31	86-NT1-011-019		KEY, RDS
8	86-NT1-001-019		CABI, FR<EXCEPT U>	32	81-MT3-211-019		LEVER, OPEN
8	86-NT1-031-019		CABI, FR U<U>	33	86-NT1-020-019		KEY, ASSY FUN
9	86-NT1-027-019		WINDOW, GEQ	34	86-NT1-030-019		KEY, TIMER
10	86-NT1-025-019		PLATE, GEQ	35	86-NT1-008-019		KEY, POWER
11	86-NT1-013-019		KEY, GEQ	A	87-067-703-019		BVT2+3-10 (W/O SLOT)
12	86-NT1-004-019		TRAY, CONTROL	B	87-078-084-019		BVTT+3-6 W, CONVEX
13	86-NT1-024-119		PLATE, TRAY	C	87-067-633-019		BVT2+3-8 W/CONVEX
14	86-NT1-003-019		CABI, STEEL	D	87-067-581-019		BVT2+3-15 W/O SLOT<EXCEPT U>
15	80-VW1-217-010		BELT, SQ 1.5	E	87-067-822-019		BVT2+3-20 W/O SLOT<U>
16	82-NT1-205-11K		PULLEY, LOADING	F	87-861-095-419		VFT2+3-8 SLOT
17	82-NT1-204-01K		GEAR, LOADING	G	87-261-073-419		V+2.6-6
18	80-VW1-204-010		PULLEY, MOTOR	H	87-067-584-019		BVT2+3-6 W/O SLOT
19	82-NT3-631-119		CORD FG 15P	I	87-591-094-419		QIT + 3 - 6 GOLD
20	89-VT5-202-010		BUSHING, CORD	J	87-571-092-419		VIT+3-4
21	87-084-077-019		NYLON RIVET DIA3.5-4.5	K	87-078-019-019		S-SCREW, IT+4-6
22	86-NT1-002-019		PANEL, REAR HEJBNM<HEJ>	L	87-067-688-019		BVTT +3-6<EXCEPT U>
22	86-NT1-042-019		PANEL, REAR HRJBNM<HRJ>	M	87-067-641-019		UTT2+3-8 W/O SLOT BLK
22	86-NT1-044-019		PANEL, REAR LHBNM<LH>				
22	86-NT1-041-019		PANEL, REAR UBNM<U>				
23	87-050-053-019		AC CORD ASSY, U-2<U>				
23	87-050-079-019		AC-CORD ASSY, E<EXCEPT U>				
24	87-085-185-019		BUSHING, AC CORD E<EXCEPT U>				
24	87-085-189-019		BUSHING, CORD U<U>				

MODEL NO.

# FD-NH9/NH90

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylit-tävälle näkymättömälle lasersäteilylle.

### WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

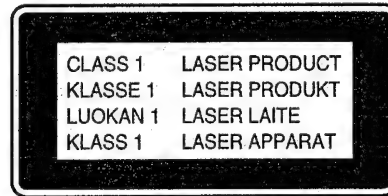
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.

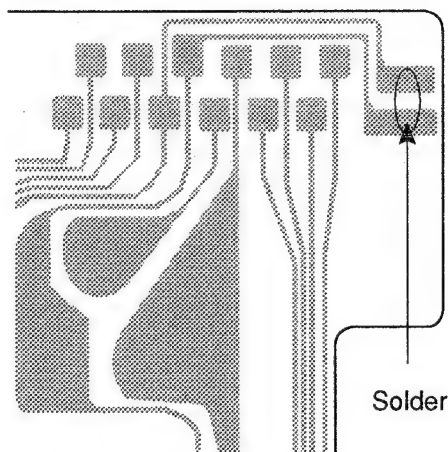


## Precaution to replace Optical block (KSS-213B)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in the right figure.

PICK-UP Assy P.C.B



ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF.NO	PART.NO.	カリ NO.	DESCRIPTION	REF.NO	PART.NO.	カリ NO.	DESCRIPTION
IC				C151	87-012-158-089		C-CAP,S 390P-50 CH
	87-020-454-010	IC, DN 6851		C152	87-012-158-089		C-CAP,S 390P-50 CH
	87-017-022-089	IC, NJM2068M-D(T1)		C153	87-010-322-089		C-CAP,S 100P-50 CH
	87-017-917-089	IC, BU4066BCF		C154	87-010-322-089		C-CAP,S 100P-50 CH
	87-001-607-089	IC, NJM4558M		C155	87-010-197-089		C-CAP,S 0.01-25 B
	87-002-272-089	IC, TC4052 BF		C156	87-010-197-089		C-CAP,S 0.01-25 B
	87-001-985-010	IC, HA12142NT		C157	87-012-156-089		C-CAP,S 220P-50 CH
	87-020-784-089	IC, TC4053BF		C158	87-012-156-089		C-CAP,S 220P-50 CH
	87-017-888-089	IC, NJM4558MD		C159	87-010-318-089		C-CAP,S 47P-50 CH
	87-017-745-019	IC, CXA1782BQ		C160	87-010-318-089		C-CAP,S 47P-50 CH
	87-070-305-019	IC, BA6897S		C181	87-016-492-089		C-CAP,S 0.33-16 FZ
	87-001-982-019	IC, TA7291S		C182	87-016-492-089		C-CAP,S 0.33-16 FZ
	87-070-294-019	IC, CXD2508AQ		C183	87-010-197-089		C-CAP,S 0.01-25 B
	86-NV1-610-010	IC, LC866424V-5A61		C184	87-010-318-089		C-CAP,S 47P-50 CH
	87-017-375-089	IC, TC4094BF		C185	87-010-197-089		C-CAP,S 0.01-25 B
TRANSISTOR				C186	87-010-402-089		CAP,E 2.2-50 SME
	87-026-463-080	TR, 2SA933S		C187	87-010-184-089		C-CAP,S 3300P-50 B
	87-026-218-089	TR, DTC144ES		C205	87-010-426-089		C-CAP,S 0.012-25 B
	87-026-448-089	TR, 2SC1740SS		C206	87-010-426-089		C-CAP,S 0.012-25 B
	87-026-463-089	TR, 2SA933SRS		C303	87-010-183-089		C-CAP,S 2700P-50 B
	87-026-219-089	TR, DTA144ES		C304	87-010-183-089		C-CAP,S 2700P-50 B
	89-503-685-089	C-FET, 2SK368GR		C305	87-010-404-089		CAP,E 4.7-50 SME
	89-113-625-089	C-TR 2SA 1362 GR(TAPG)		C306	87-010-404-089		CAP,E 4.7-50 SME
	87-026-210-089	C-TR, DTC144EK T147		C323	87-012-157-089		C-CAP,S 330P-50 CH
	89-327-125-089	C-TR, 2SC2712GR		C324	87-012-157-089		C-CAP,S 330P-50 CH
	89-320-011-089	TR, 2SC2001K		C341	87-010-196-089		C-CAP,S 0.1-25 F
	89-109-521-089	TR, 2SA952K		C342	87-010-196-089		C-CAP,S 0.1-25 F
	89-318-155-089	TR, 2SC1815GR		C343	87-010-196-089		C-CAP,S 0.1-25 F
	89-333-317-889	TR, 2SC3331 TU		C345	87-010-404-089		CAP,E 4.7-50 SME
	89-333-266-089	C-TR, 2SC3326B		C346	87-010-404-089		CAP,E 4.7-50 SME
	87-026-233-089	C-TR, DTA114TK		C347	87-010-404-089		CAP,E 4.7-50 SME
	87-026-211-089	C-TR, DTA144EK T147		C348	87-010-404-089		CAP,E 4.7-50 SME
	89-110-373-089	C-TR, 2SA1037S		C361	87-010-400-089		CAP,E 0.47-50 SME
	87-026-239-089	C-TR, DTC114TK		C362	87-010-400-089		CAP,E 0.47-50 SME
	89-113-187-089	TR, 2SA1318TU		C363	87-010-400-089		CAP,E 0.47-50 SME
	89-421-722-389	TR, 2SD2172 V/W		C364	87-010-400-089		CAP,E 0.47-50 SME
	87-026-223-089	C-TR, DTC143TK		C365	87-010-182-089		C-CAP,S 2200P-50 B
	87-026-608-089	C-TR, DTC 123 JK		C366	87-010-182-089		C-CAP,S 2200P-50 B
	87-A30-039-089	C-TR, 2SD1383K		C367	87-010-182-089		C-CAP,S 2200P-50 B
	89-112-965-089	TR, 2SA1296GR		C368	87-010-182-089		C-CAP,S 2200P-50 B
	87-026-228-089	C-TR DTA124EK		C369	87-010-182-089		C-CAP,S 2200P-50 B
				C370	87-010-182-089		C-CAP,S 2200P-50 B
				C371	87-010-196-089		C-CAP,S 0.1-25 F
				C372	87-010-196-089		C-CAP,S 0.1-25 F
				C373	87-010-196-089		C-CAP,S 0.1-25 F
DIODE				C374	87-010-196-089		C-CAP,S 0.1-25 F
	87-020-465-089	DIODE, 1SS133		C375	87-010-402-089		CAP,E 2.2-50 SME
	87-001-290-089	ZENER, HZS6B1L		C376	87-010-402-089		CAP,E 2.2-50 SME
	87-017-121-089	ZENER, HZS11A1		C377	87-010-247-089		CAP,E 100-50 SME
	87-020-123-089	DIODE DS446-AT (TA)		C378	87-010-401-089		CAP,E 1-50 SME
	87-001-731-089	ZENER HZS6C2L		C379	87-010-406-089		CAP,E 22-50 SME
	87-020-331-089	C-DIODE, DAN202K		C381	87-010-402-089		CAP,E 2.2-50 SME
	87-017-091-089	ZENER, HZS5C1		C382	87-010-402-089		CAP,E 2.2-50 SME
	87-020-339-089	C-DIODE, 1SS226		C401	87-012-156-089		C-CAP,S 220P-50 CH
	87-017-097-089	ZENER, HZS6B1		C402	87-012-156-089		C-CAP,S 220P-50 CH
	87-020-330-089	C-DIODE, DAP202K		C403	87-014-059-089		CAP, PP 1200P-100 J
				C405	87-010-263-089		CAP,E 100-10 SME 5X11
				C409	87-010-402-089		CAP,E 2.2-50 SME
				C410	87-010-405-089		CAP,E 10-50 SME
				C411	87-010-178-089		C-CAP,S 1000P-50 B
MAIN C.B				C412	87-010-221-089		CAP,E 470-10 11L
C101	87-012-158-089	C-CAP,S 390P-50 CH		C414	87-010-196-089		C-CAP,S 0.1-25 F
C102	87-012-158-089	C-CAP,S 390P-50 CH		C451	87-010-237-089		CAP,E 1000-16
C103	87-010-318-089	C-CAP,S 47P-50 CH		C452	87-010-101-089		CAP,E 220-16 SME
C104	87-010-318-089	C-CAP,S 47P-50 CH		C453	87-010-404-089		CAP,E 4.7-50 SME
C105	87-010-193-089	C-CAP,S 0.033-25 F		C454	87-010-248-049		CAP,E 220-10 SME
C106	87-010-193-089	C-CAP,S 0.033-25 F		C455	87-010-401-089		CAP,E 1-50 SME
C109	87-012-154-089	C-CAP,S 150P-50 CH		C456	87-010-401-089		CAP,E 1-50 SME
C110	87-012-154-089	C-CAP,S 150P-50 CH		C457	87-010-263-089		CAP,E 100-10 SME 5X11
C111	87-010-197-089	C-CAP,S 0.01-25 B		C458	87-010-381-089		CAP,E 330-16 SME
C112	87-010-197-089	C-CAP,S 0.01-25 B					
C113	87-010-196-089	C-CAP,S 0.1-25 F					

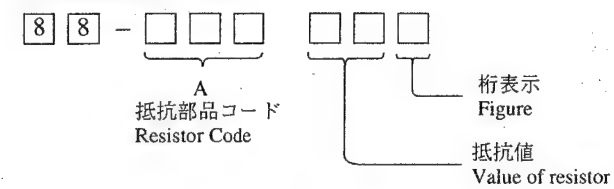
REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
C459	87-010-196-089		C-CAP,S 0.1-25 F	C648	87-010-196-089		C-CAP,S 0.1-25 F
C481	87-010-406-089		CAP,E 22-50 SME	C649	87-010-193-089		C-CAP,S 0.033-25 F
C482	87-010-406-089		CAP,E 22-50 SME	C661	87-010-196-089		C-CAP,S 0.1-25 F
C483	87-010-263-089		CAP,E 100-10 SME 5X11	C662	87-010-260-089		CAP,E 47-25 SME
C484	87-010-408-089		CAP,E 47-50 SME	C681	87-010-197-089		C-CAP,S 0.01-25 B
C485	87-010-221-089		CAP,E 470-10 11L	C692	87-010-381-089		CAP,E 330-16 SME
C486	87-010-221-089		CAP,E 470-10 11L	C693	87-010-196-089		C-CAP,S 0.1-25 F
C501	87-010-405-089		CAP,E 10-50 SME	C701	87-010-194-089		C-CAP,S 0.047-25 F
C502	87-010-198-089		C-CAP,S 0.022-25 B	C702	87-010-188-089		C-CAP,S 6800P-50 B
C503	87-010-196-089		C-CAP,S 0.1-25 F	C703	87-010-186-089		C-CAP,S 4700P-50 B
C504	87-010-196-089		C-CAP,S 0.1-25 F	C704	87-012-156-089		C-CAP,S 220P-50 CH
C505	87-010-196-089		C-CAP,S 0.1-25 F	C705	87-010-404-089		CAP,E 4.7-50 SME
C506	87-018-209-089		CAP,TC-U 0.1-50 F	C706	87-010-263-089		CAP,E 100-10 SME 5X11
C516	87-010-381-089		CAP,E 330-16 SME	C707	87-010-197-089		C-CAP,S 0.01-25 B
C517	87-010-404-089		CAP,E 4.7-50 SME	C708	87-010-400-089		CAP,E 0.47-50 SME
C518	87-010-404-089		CAP,E 4.7-50 SME	C709	87-010-197-089		C-CAP,S 0.01-25 B
C519	87-010-405-089		CAP,E 10-50 SME	C711	87-010-196-089		C-CAP,S 0.1-25 F
C520	87-010-405-089		CAP,E 10-50 SME	C713	87-010-263-089		CAP,E 100-10 SME 5X11
C521	87-012-154-089		C-CAP,S 150P-50 CH	C714	87-010-197-089		C-CAP,S 0.01-25 B
C522	87-012-154-089		C-CAP,S 150P-50 CH	C715	87-010-318-089		C-CAP,S 47P-50 CH
C523	87-010-405-089		CAP,E 10-50 SME	C716	87-010-318-089		C-CAP,S 47P-50 CH
C524	87-010-316-089		C-CAP,S 33P-50 CH	C717	87-018-134-089		CAP,TC-U 0.01-16 Y
C525	87-012-154-089		C-CAP,S 150P-50 CH	C741	87-012-153-089		C-CAP,S 120P-50 CH
C526	87-012-154-089		C-CAP,S 150P-50 CH	C742	87-012-153-089		C-CAP,S 120P-50 CH
C527	87-010-387-089		CAP,ELECT 470-25V	C743	87-010-321-089		C-CAP,S 82P-50 CH
C528	87-010-384-089		CAP,E 100-25 SME	C744	87-010-321-089		C-CAP,S 82P-50 CH
C529	87-010-374-089		CAP,E 47-10 11L	C745	87-010-321-089		C-CAP,S 82P-50 CH
C530	87-010-316-089		C-CAP,S 33P-50 CH	C746	87-010-321-089		C-CAP,S 82P-50 CH
C531	87-010-316-089		C-CAP,S 33P-50 CH	C747	87-012-153-089		C-CAP,S 120P-50 CH
C533	87-012-157-089		C-CAP,S 330P-50 CH	C748	87-012-153-089		C-CAP,S 120P-50 CH
C534	87-012-157-089		C-CAP,S 330P-50 CH	C749	87-012-153-089		C-CAP,S 120P-50 CH
C535	87-012-154-089		C-CAP,S 150P-50 CH	C750	87-012-153-089		C-CAP,S 120P-50 CH
C536	87-012-154-089		C-CAP,S 150P-50 CH	C751	87-010-401-089		CAP,E 1-50 SME
C601	87-010-182-089		C-CAP,S 2200P-50 B	C752	87-010-401-089		CAP,E 1-50 SME
C602	87-010-196-089		C-CAP,S 0.1-25 F	C753	87-010-186-089		C-CAP,S 4700P-50 B
C603	87-010-196-089		C-CAP,S 0.1-25 F	C754	87-010-186-089		C-CAP,S 4700P-50 B
C604	87-010-196-089		C-CAP,S 0.1-25 F	C755	87-010-221-089		CAP,E 470-10 11L
C605	87-010-404-089		CAP,E 4.7-50 SME	C756	87-010-263-089		CAP,E 100-10 SME 5X11
C606	87-010-193-089		C-CAP,S 0.033-25 F	C771	87-018-119-089		CAP,TC-U 100P-50 B
C607	87-010-197-089		C-CAP,S 0.01-25 B	C772	87-018-119-089		CAP,TC-U 100P-50 B
C608	87-010-402-089		CAP,E 2.2-50 SME	C773	87-010-318-089		C-CAP,S 47P-50 CH
C609	87-010-265-089		CAP,E 33-16 SME	C774	87-018-131-089		CAP,TC-U 1000P-50 B
C610	87-010-213-089		C-CAP,S 0.015-25 B	C775	87-018-209-089		CAP,TC-U 0.1-50 F<YU>
C611	87-010-197-089		C-CAP,S 0.01-25 B	C791	87-010-263-089		CAP,E 100-10 SME 5X11
C612	87-010-263-089		CAP,E 100-10 SME 5X11	C792	87-010-197-089		C-CAP,S 0.01-25 B
C613	87-018-134-089		CAP,TC-U 0.01-16 Y	C901	87-018-149-089		CAP,TC-U 15P-50 CH
C614	87-010-193-089		C-CAP,S 0.033-25 F	C902	87-012-155-089		C-CAP,S 180P-50 CH
C615	87-010-197-089		C-CAP,S 0.01-25 B	C941	87-010-196-089		C-CAP,S 0.1-25 F
C616	87-010-193-089		C-CAP,S 0.033-25 F	C942	87-010-196-089		C-CAP,S 0.1-25 F
C617	87-010-197-089		C-CAP,S 0.01-25 B	C943	87-010-384-089		CAP,E 100-25 SME
C618	87-010-146-089		C-CAP,S 2P-50 CH	C944	87-010-322-089		C-CAP,S 100P-50 CH
C619	87-010-154-089		C-CAP,S 10P-50 CH	C945	87-010-322-089		C-CAP,S 100P-50 CH
C620	87-010-263-089		CAP,E 100-10 SME 5X11	C946	87-010-322-089		C-CAP,S 100P-50 CH
C621	87-010-178-089		C-CAP,S 1000P-50 B	CON903	86-NV1-613-019		CONN ASSY,4P CST
C622	87-010-198-089		C-CAP,S 0.022-25 B	CON910	87-009-065-019		CONN,15P FG
C623	87-010-196-089		C-CAP,S 0.1-25 F	EMI803	87-008-372-089		FLTR,EMI BL01RNI
C624	87-010-197-089		C-CAP,S 0.01-25 B	FC1	85-NFT-611-119		FF-CABLE,16P-1.0
C625	87-010-263-089		CAP,E 100-10 SME 5X11	FC2	88-916-301-119		FF-CABLE,16P 1.25
C626	87-010-248-089		CAP,E 220-10 SME	FC3	88-909-251-119		FF-CABLE,9P 1.25
C627	87-010-197-089		C-CAP,S 0.01-25 B	FC4	88-906-201-119		FF-CABLE,6P 1.25
C628	87-010-260-089		CAP,E 47-25 SME	FC5	84-ZG1-630-019		CABLE FFC 6P-1.25
C629	87-010-196-089		C-CAP,S 0.1-25 F	FL901	86-NV1-619-019		FL,7-ST-27G
C640	87-010-196-089		C-CAP,S 0.1-25 F	J901	81-VP1-635-019		JACK,PIN 3P EARTH
C641	87-010-221-089		CAP,E 470-10 11L	J902	81-VP1-634-019		JACK,PIN 3P
C642	87-010-196-089		C-CAP,S 0.1-25 F	J903	81-VP1-635-019		JACK,PIN 3P EARTH
C643	87-010-197-089		C-CAP,S 0.01-25 B	L301	86-NV1-618-019		COIL,TRAP 108K
C644	87-010-263-089		CAP,E 100-10 SME 5X11	L302	86-NV1-618-019		COIL,TRAP 108K
C645	87-010-221-089		CAP,E 470-10 11L	L303	87-003-131-089		COIL,10MH J
C646	87-010-197-089		C-CAP,S 0.01-25 B	L304	87-003-131-089		COIL,10MH J
C647	87-010-196-089		C-CAP,S 0.1-25 F	L305	87-003-123-089		COIL,2.2MH J

REF. NO	PART NO.	カブリ NO.	DESCRIPTION
L306	87-003-123-089		COIL,2.2MH J
L401	86-NV1-617-019		COIL,OSC BIAS 108K
L402	87-005-447-089		COIL,180UH FLR50
L451	87-005-474-089		COIL,12UH J FLR50
L601	87-003-295-089		COIL,10UH
L901	87-A50-052-019		COIL,CLOCK 5.76MHZ T1
LED791	87-A40-123-019		LED,SLZ-8128A-01-B
LED910	87-070-108-019		LED,SLF-301C-37
LED911	87-070-108-019		LED,SLF-301C-37
SFR101	87-024-238-089		SFR,1K DIA6 V TP
SFR102	87-024-238-089		SFR,1K DIA6 V TP
SFR151	87-024-238-089		SFR,1K DIA6 V TP
SFR152	87-024-238-089		SFR,1K DIA6 V TP
SFR301	87-024-271-089		SFR4.7K DIA6 V
SFR302	87-024-271-089		SFR4.7K DIA6 V
SFR401	87-024-275-089		SFR,47K DIA6 V TP
SFR402	87-024-275-089		SFR,47K DIA6 V TP
SFR601	87-024-175-089		SFR,47K DIA6 V
SFR602	87-024-176-089		SFR,100K DIA6 V
SFR603	87-024-176-089		SFR,100K DIA6 V
SW731	87-036-109-019		SW,PUSH SPPB 61
SW732	87-036-109-019		SW,PUSH SPPB 61
VR501	86-NV1-616-019		VR,50KEX2 RK14K12A0L30
VR502	81-MX4-636-019		VR,50KEX2 RK14K12A0L30
X701	87-030-270-089		VIB,XTAL 16.934MHZ
KEY1 C.B			
FC6	88-909-251-119		FF-CABLE,9P 1.25
LED901	87-001-161-019		LED,SEL 2410 E GR
LED902	87-001-161-019		LED,SEL 2410 E GR
LED903	87-001-161-019		LED,SEL 2410 E GR
LED904	87-001-161-019		LED,SEL 2410 E GR
LED905	87-001-161-019		LED,SEL 2410 E GR
LED906	87-001-161-019		LED,SEL 2410 E GR
S901	87-A90-095-089		SW,TACT EVQ11G04M
S902	87-A90-095-089		SW,TACT EVQ11G04M
S903	87-A90-095-089		SW,TACT EVQ11G04M
S904	87-A90-095-089		SW,TACT EVQ11G04M
S905	87-A90-095-089		SW,TACT EVQ11G04M
S906	87-A90-095-089		SW,TACT EVQ11G04M
S907	87-A90-095-089		SW,TACT EVQ11G04M
S908	87-A90-095-089		SW,TACT EVQ11G04M
S909	87-A90-095-089		SW,TACT EVQ11G04M
S910	87-A90-095-089		SW,TACT EVQ11G04M
KEY2 C.B			
LED907	87-002-817-019		LED,SEL 2215 S RED
LED908	87-002-817-019		LED,SEL 2215 S RED
LED909	87-002-817-019		LED,SEL 2215 S RED
S912	87-A90-095-089		SW,TACT EVQ11G04M
S913	87-A90-095-089		SW,TACT EVQ11G04M
S914	87-A90-095-089		SW,TACT EVQ11G04M
S915	87-A90-095-089		SW,TACT EVQ11G04M
S916	87-A90-095-089		SW,TACT EVQ11G04M


REF. NO	PART NO.	カブリ NO.	DESCRIPTION
LED C.B			
LED701	87-017-806-010		LED,SEL1810DM
LED702	87-017-350-080		LED,SEL1550CM
LED703	87-017-350-080		LED,SEL1550CM
LED704	87-017-806-010		LED,SEL1810DM
VIDEO2 C.B			
C1	87-010-112-089		CAP,E 100-16 SME
C2	87-010-405-089		CAP,E 10-50 SME
C3	87-010-405-089		CAP,E 10-50 SME
C4	87-010-405-089		CAP,E 10-50 SME
C5	87-010-405-089		CAP,E 10-50 SME
C6	87-010-112-089		CAP,E 100-16 SME
T-T C.B			
C401	87-018-214-089		CAP TC U 0.1-50 F
FC401	84-ZG1-614-119		CABLE FFC 5P-1.25
M401	87-045-364-019		MOTOR, (BCH3B14)
PS401	87-026-573-019		P-SNSR,GP1S53V
DECK C.B			
CON501	82-ZM1-625-019		RBN-CORD,4P-55
SFR1	87-099-756-019		CONN,15P 9604S F
SOL1	87-024-581-010		SFR,3.3K DIA 6H
SOL2	82-ZM1-618-310		SOL ASSY,27
	82-ZM1-626-010		SOL ASSY,27K
SW1	87-036-378-010		SW,PUSH 1-1-1 SH2
SW2	87-036-378-010		SW,PUSH 1-1-1 SH2
SW3	87-036-378-010		SW,PUSH 1-1-1 SH2
SW4	87-036-378-010		SW,PUSH 1-1-1 SH2
SW5	87-036-378-010		SW,PUSH 1-1-1 SH2
SW6	87-036-378-010		SW,PUSH 1-1-1 SH2
SW7	87-036-378-010		SW,PUSH 1-1-1 SH2
SW8	87-036-378-010		SW,PUSH 1-1-1 SH2
SW9	87-036-378-010		SW,PUSH 1-1-1 SH2
HEAD-1 C.B			
W106	86-NV1-611-019		CONN ASSY,3P DECK1
HEAD-2 C.B			
W105	86-NV1-612-019		CONN ASSY,8P DECK2
DRIVE C.B			
M1	87-045-358-019		MOT,RF-310TA 43
M2	87-045-356-019		MOT,RF-310TA 30
SW1	87-A90-042-019		SW,LEAF MSW 17310 MVPO

○ チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION



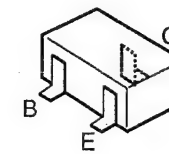
ECB

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2SC1740S  
DTA144ES  
DTC144ES

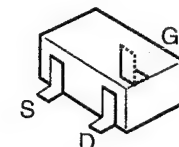


ECB

2SA952  
2SA1296  
2SA1318  
2SC1815  
2SC2001  
2SC3331  
2SD2172



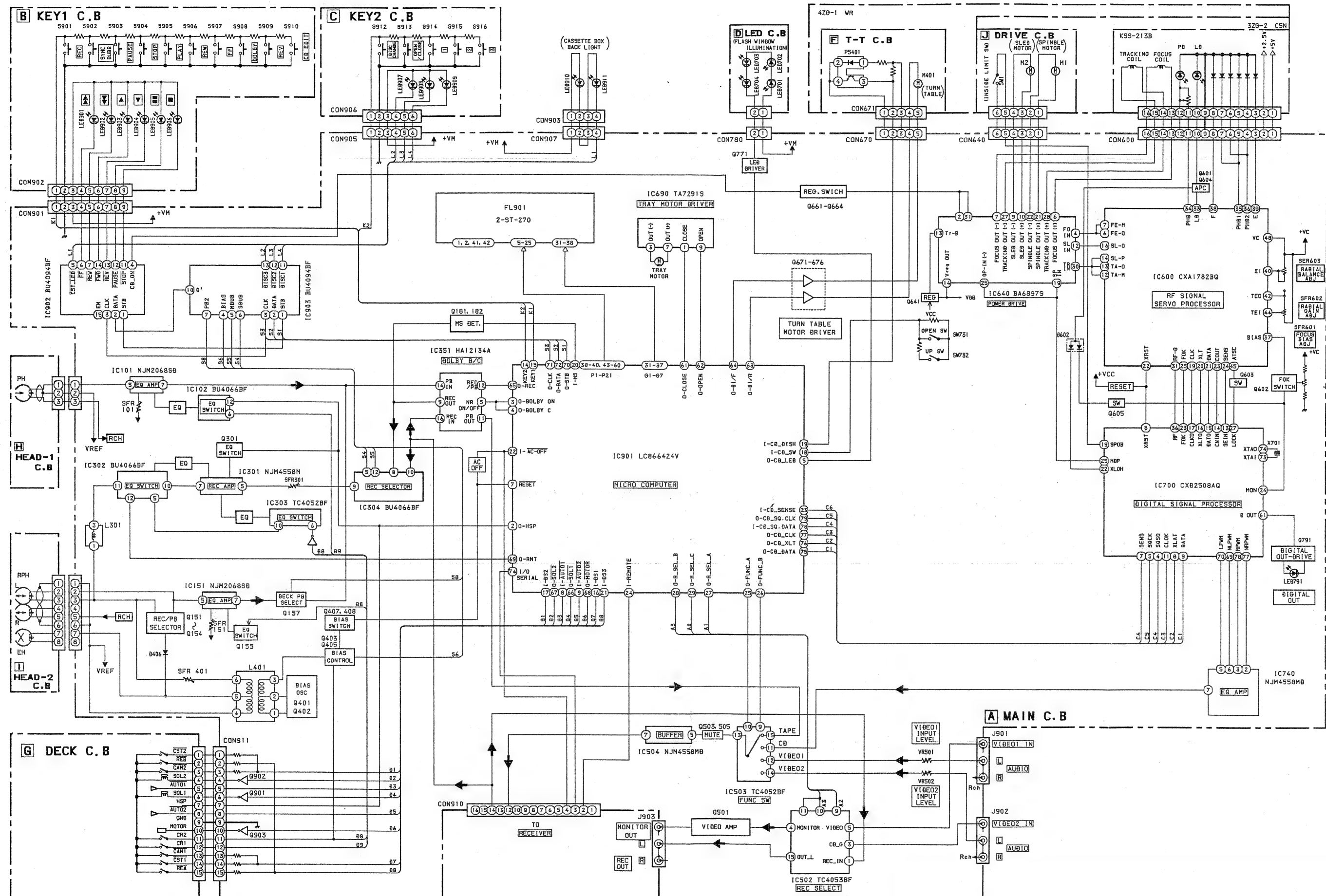
2SA1037  
2SA1362  
2SC2712  
2SC3326  
2SD1383  
DTA114TK



2SK368

DTA124EK  
DTA144EK  
DTC114TK  
DTC123JK  
DTC143TK  
DTC144EK

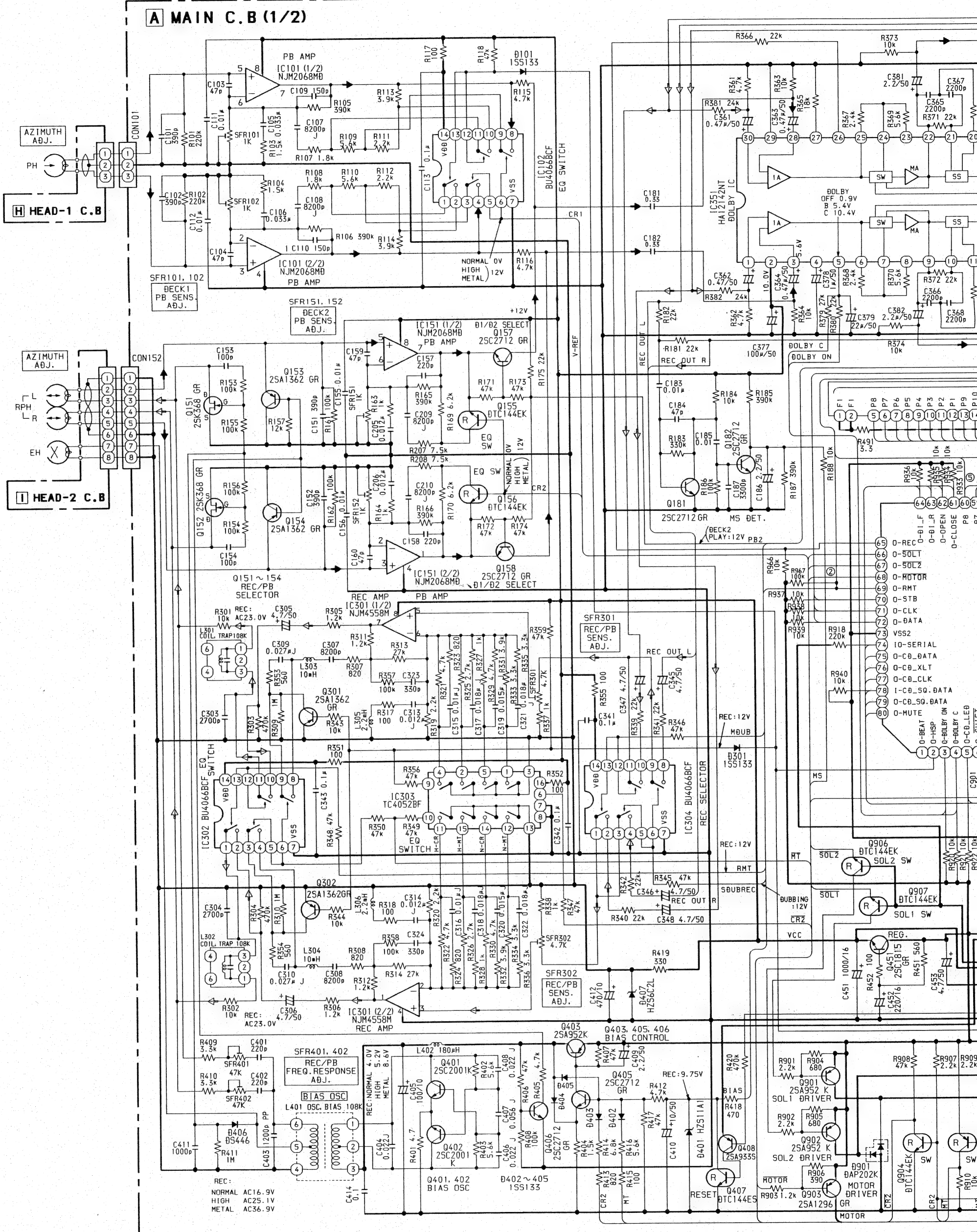
# BLOCK DIAGRAM







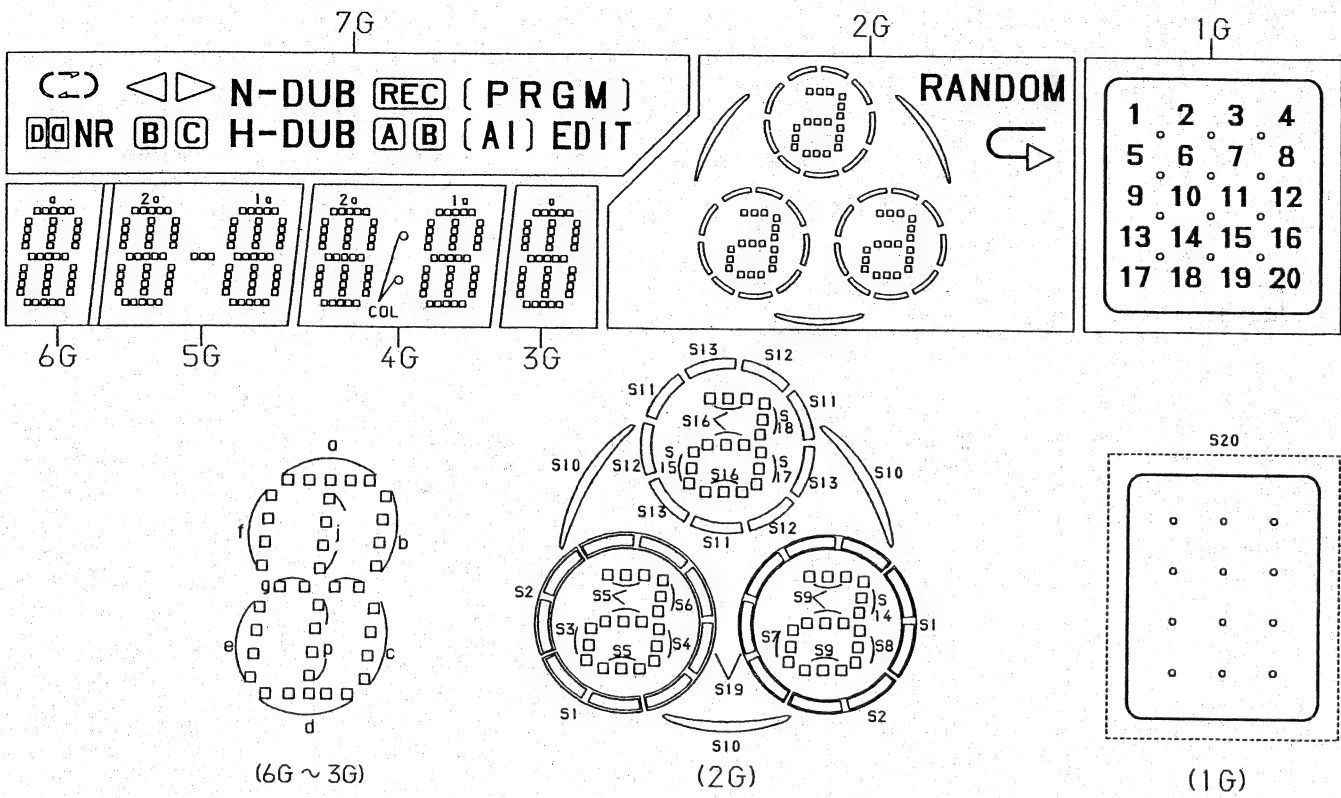
**SCHEMATIC DIAGRAM-1 (MAIN 1/2)**







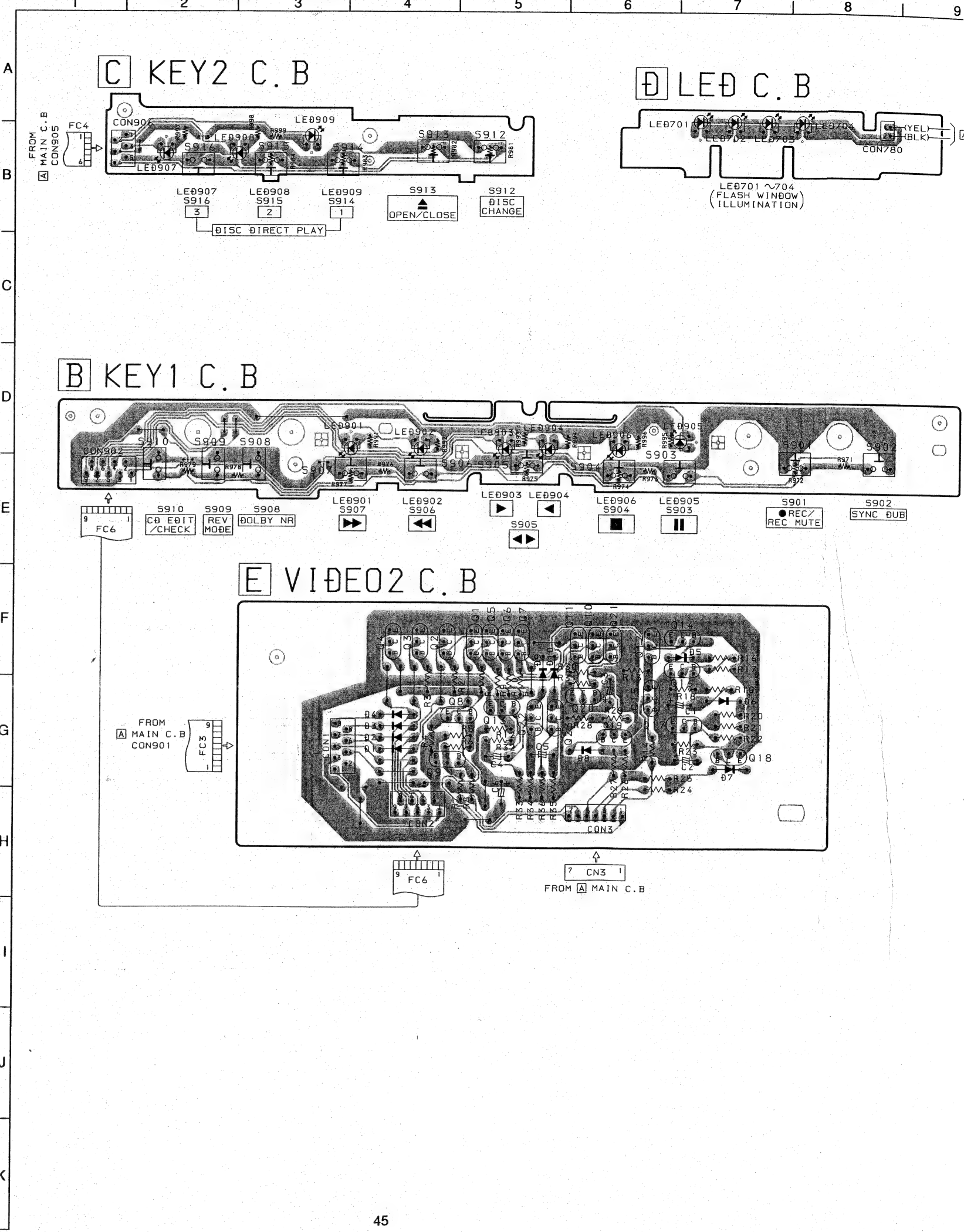
GRID ASSIGNMENT



ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	<b>NR</b>	d	1d	1d	d	S1	<b>20</b>
P2	<b>C</b>	p	1p	1p	p	S2	<b>19</b>
P3	<b>Z</b>	e	1e	1e	e	S3	<b>18</b>
P4	<b>)</b>	c	1c	1c	c	S4	<b>17</b>
P5	<b>B (LEFT)</b>	q	1q	1q	q	S5	<b>16</b>
P6	<b>C</b>	f	1f	1f	f	S6	<b>15</b>
P7	<b>&lt;</b>	b	1b	1b	b	S7	<b>14</b>
P8	<b>&gt;</b>	j	1j	1j	j	S8	<b>13</b>
P9	<b>N-DUB</b>	a	1a	1a	a	S9	<b>12</b>
P10	<b>H-DUB</b>	—	2d	2d	—	S10	<b>11</b>
P11	<b>REC</b>	—	2p	2p	—	S11	<b>10</b>
P12	<b>A</b>	—	2e	2e	—	S12	<b>9</b>
P13	<b>B (RIGHT)</b>	—	2c	2c	—	S13	<b>8</b>
P14	<b>PRGM</b>	—	2g	2g	—	S14	<b>7</b>
P15	<b>AI</b>	—	2i	2i	—	S15	<b>6</b>
P16	<b>EDIT</b>	—	2b	2b	—	S16	<b>5</b>
P17	<b>(PRGM)</b>	—	2j	2j	—	S17	<b>4</b>
P18	<b>(AI)</b>	—	2a	2a	—	S18	<b>3</b>
P19	—	—	—	COL (HIGH)	—	S19	<b>2</b>
P20	—	—	—	COL (LOW)	—	<b>1</b>	
P21	—	—	—	—	—	<b>RANDOM</b>	<b>S20</b>

WIRING-2 (KEY, VIDEO2, DECK, HEAD, LED)

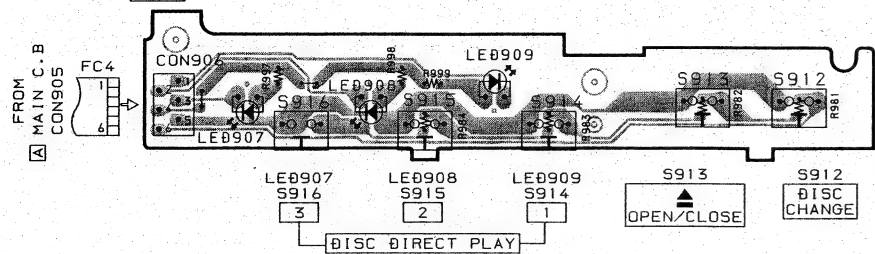




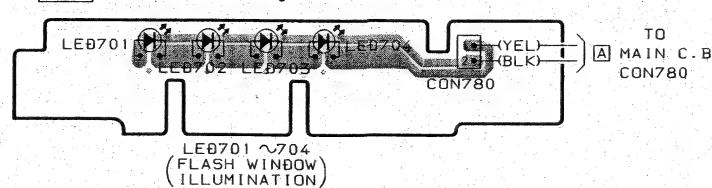
1 2 3 4 5 6 7 8 9 10 11 12 13 14

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K

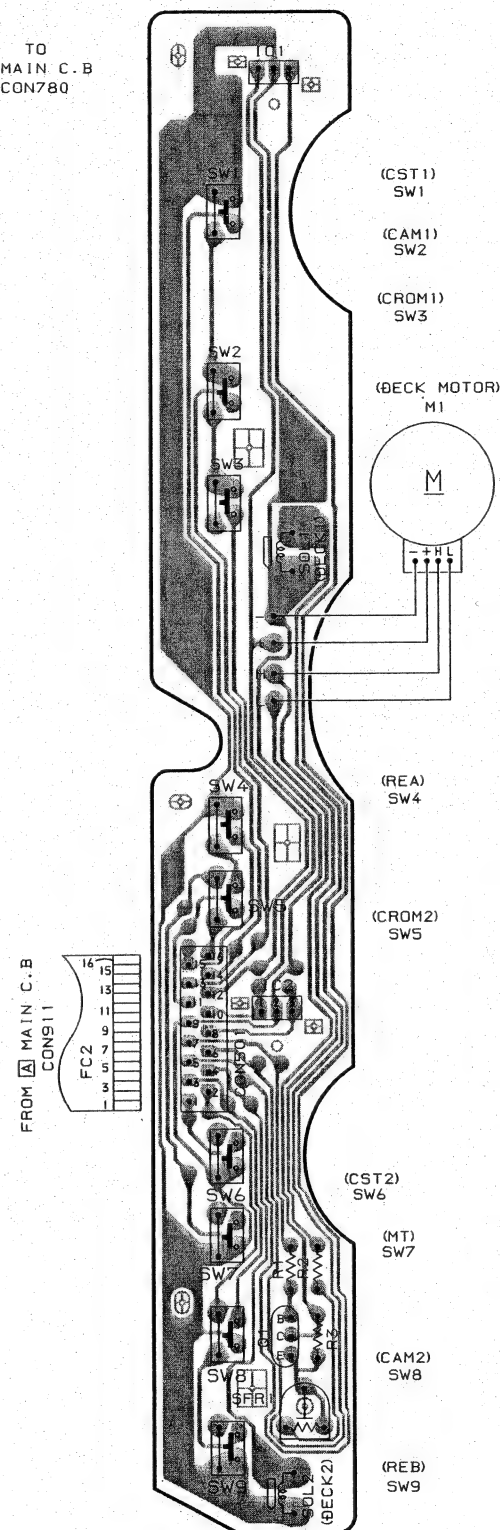
C KEY2 C.B



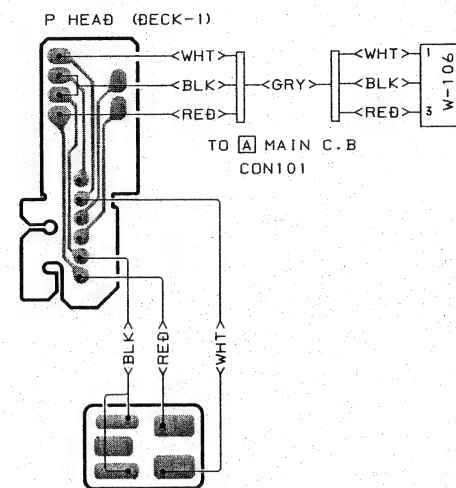
D LED C.B



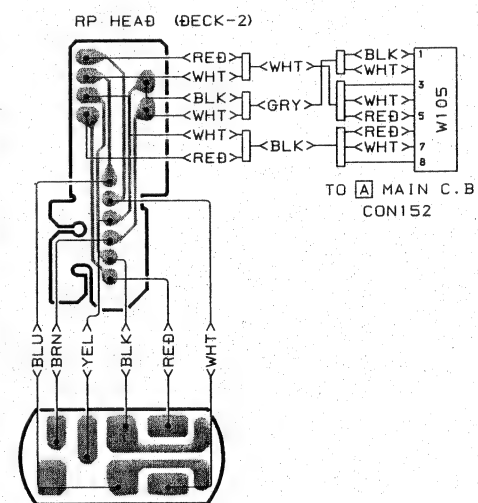
G DECK C.B



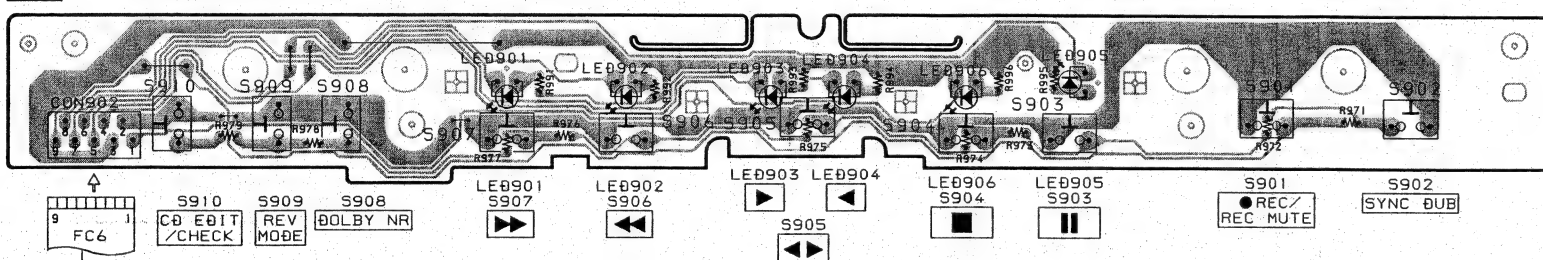
H HEAD-1 C.B



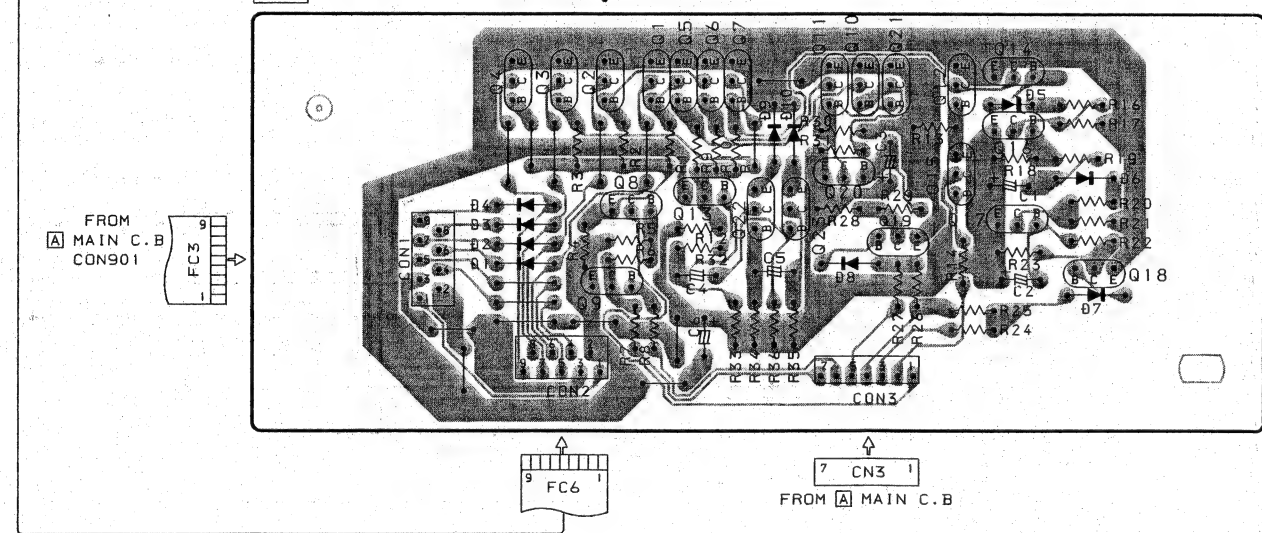
I HEAD-2 C.B



B KEY1 C.B

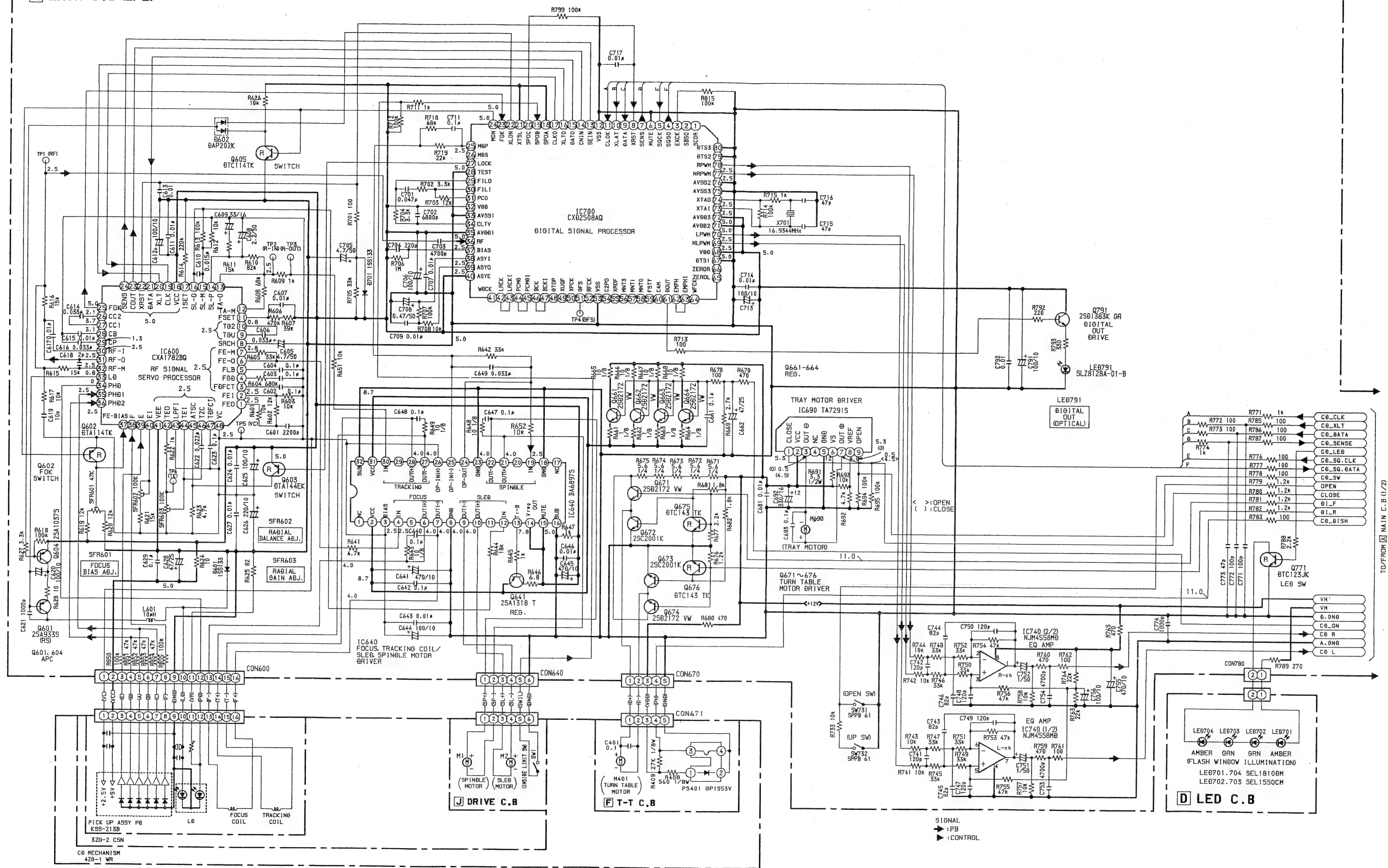


E VIDEO2 C.B





## A MAIN C.B (2/2)



IC DESCRIPTION

IC, LC866424V-5A61

Pin No.	Pin Name	I/O	Description					
1	O-BEAT	O	REC beat output. (ON/ $\overline{\text{OFF}}$ )					
2	O-HSP	O	High speed dubbing switch. (HIGH/ $\overline{\text{NORMAL}}$ )					
3	O-DOLBY/ON	O	DOLBY IC switch output. (DOLBY ON/ $\overline{\text{OFF}}$ )					
4	O-DOLBY/C	O	DOLBY IC mode switch output. (DOLBY $\overline{\text{B}}$ /C)					
5	O-CD/LED	O	Flash window output. (ON/ $\overline{\text{OFF}}$ )					
6	O-SHIFT	O	Microprocessor clock shift out during tuner reception.					
7	$\overline{\text{RESET}}$	I	Reset input (Reset at "L").					
8	I-AUTO 1	I	Deck 1 auto stop input.					
9	I-AUTO 2	I	Deck 2 auto stop input.					
10	VSS 1	-	GND.					
11	CF 1	I	5.76 MHz oscillator.					
12	CF 2	O	5.76 MHz oscillator.					
13	VDD 1	-	Power supply input.					
14	I-KEY 1	I	Key 1 A/D input.					
15	I-KEY 2	I	Key 2 A/D input.					
16	I-DS 1	I	Deck 1 mechanism switch input.					
17	I-DS 2	I	Deck 2 mechanism switch input.					
18	I-CD/ $\overline{\text{SW}}$	I	CD mechanism switch A/D input.					
19	I-CD/DISH	I	CD turntable photo sensor A/D input.					
20	I-MS	I	Deck MS detection A/D input.					
21	I-DS 3	I	Deck mechanism switch input (REC enable A/D input).					
22	I- $\overline{\text{AC/OFF}}$	I	HOLD input.					
23	I-CD/SENSE	I	CD microprocessor control SENSE input.					
24	I-TYPE	I	TYPE select A/D input. (H : DOLBY C / L : DOLBY B)					
25~26	O-FUNC/A~B	O	FUNCTION switch output.		AUX1	AUX2	TAPE	CD
				A	0	1	0	1
				B	0	0	1	1
27	O-R-SEL/A	O	Video signal switch. (VIDEO $\overline{1/2}$ )					
28	O-R-SEL/B	O	REC output switch. (ON/ $\overline{\text{MUTE}}$ )					
29	O-R-SEL/C	O	Monitor output switch. ( $\overline{\text{VIDEO}}$ /CDG)					
30	-	-	Not used.					
31~37	G7~G1	O	FL grid output (G7~G1).					
38~40	P21~P19	O	FL segment output P21~P19.					
41	VDD2	-	Power supply input.					
42	-VP	-	Power supply for FL display .					
43~60	P18~P8	O	FL segment output P18~P8.					
61	O-CLOSE	O	CD tray close data output.					
62	O-OPEN	O	CD tray open data output.					
63	O-DI/R	O	CD turntable reverse rotation output.					
64	O-DI/F	O	CD turntable forward rotation output.					
65	O-REC	O	Deck REC switch output.					
66	O- $\overline{\text{SOL1}}$	O	Deck 1 plunger $\overline{\text{ON/OFF}}$ output.					

67	O- $\overline{\text{SOL2}}$	O	Deck 2 plunger $\overline{\text{ON/OFF}}$ output.
68	O- $\overline{\text{MOTOR}}$	O	Deck motor $\overline{\text{ON/OFF}}$ output.
69	O-RMT	O	REC mute $\overline{\text{ON/OFF}}$ output.
70	O-STB	O	Front shift register, data latch strobe output.
71	O-CLK	O	Front shift register, data transfer clock output.
72	O-DATA	O	Front shift register, data output.
73	VSS2	-	GND.
74	I/O/SERIAL	I/O	Command input / output with the CD microprocessor.
75	O-CD/DATA	O	CD microprocessor control data output.
76	O-CD/XLT	O	CD microprocessor control latch output.
77	O-CD/CLK	O	CD microprocessor control clock output.
78	I-CD/SQ,DATA	I	CD SUB-Q data input.
79	O-CD/SQ,DATA	O	CD SUB-Q clock output.
80	O-MUTE	O	System mute ON/ $\overline{\text{OFF}}$ output.

# IC, CXD2508AQ

Pin No.	Pin Name	I/O	Description
1	SCOR	O	1H when the subcode sync S0 or S1 is detected.
2	SBSO	O	SUBP ~ W serial output.
3	EXCK	I	Clock input for SBSO read out.
4	SQSO	O	SUBQ 80-bit serial output.
5	SQCK	I	Clock input for SQSO read out.
6	MUTE	I	H to mute. L to cancel. (Connected to GND)
7	SENS	O	SENS signal output to MAIN CPU.
8	XRST	I	System reset. L to reset.
9	DATA	I	Serial data input from MAIN CPU.
10	XLAT	I	Latch input from MAIN CPU. Latching serial data at fall down.
11	CLOCK	I	Clock input from MAIN CPU to transfer serial data.
12	VSS	-	GND.
13	SEIN	I	SENS input from SSP.
14	CNIN	I	Numbers of track jump are counted and input.
15	DATO	O	Serial data output to SSP.
16	XLTO	O	Serial data latched output to SSP. Latched at fall down edge.
17	CLKO	O	Clock input from SSP to transfer serial data.
18	TEST2	I	TEST. (Connected to +5V)
19~21	SPOB~D	I	Input from INSIDE LIMIT switch (SW1).
22	XLON	O	Mute control output.
23	FOK	I	Focus OK input pin. Used for SENS output and servo auto sequencer.
24	MON	O	Spindle motor ON/OFF control output.
25	MDP	O	Spindle motor servo control output.
26	MDS	O	Spindle motor servo control output.
27	LOCK	O	GFS is sampled by 460Hz. H output when GFS is H. L output when GFS is L for 8 consecutive times.
18	TEST1	I	TEST. (Connected to GND)
19	FILO	O	Filter output to master PLL. (Slave = digital PLL)
30	FILI	I	Filter input to master PLL.
31	PCO	O	Charge-pump output to master PLL.
32	VDD	-	Power supply input. (+5V)
33	AVSS1	-	GND.
34	CLTV	I	VCO control voltage input to master PLL.
35	AVDD1	-	Power supply input. (+5V)
36	RF	I	EFM signal input.
37	BIAS	I	Constant current input to asymmetry correction circuit.
38	ASYI	I	Comparator voltage input to asymmetry correction circuit.
39	ASYO	O	EFM full swing output. (L = VSS, H = VDD)
40	ASYE	I	L: asymmetry correction OFF. H: asymmetry correction ON. (Connected to +5V)
41	WCDK	O	D/A interface, word clock (2Fs) for 48-bit slot.

Pin No.	Pin Name	I/O	Description
42	LRCK	O	D/A interface, LR clock (FS) for 48-bit slot.
43	LRCKI	I	LR clock input to DAC. (48-bit slot)
44	PCMD	O	D/A interface, serial data. (2's complement, MSB first)
45	PCMDI	I	Audio data input to DAC. (48-bit slot)
46	BCK	O	D/A interface, bit clock.
47	BCKI	I	Bit clock input to DAC. (48-bit slot)
48	GTOP	O	GTOP output.
49	XUGF	O	XUGF output.
50	XPCK	O	XPLCK output.
51	GFS	O	GFS output.
52	RFCK	O	RFCK output.
53	VSS	-	GND.
54	C2PO	O	C2PO output.
55	XROF	O	XRAOF output.
56	MNT3	O	MNT3 output.
57	MNT1	O	MNT1 output.
58	MNT0	O	MNT0 output.
59	FSTT	O	Pins-73 and -74 divided-by 2/3 output.
60	C4M	O	4.2336MHz output.
61	DOUT	O	Digital Out connector output signal.
62	EMPH	O	H when the play back disk has emphasis. L when it does not.
63	EMPHI	I	DAC emphasis ON/OFF. H when ON. L when OFF.
64	WFCK	O	WFCK (WRITE FRAME CLOCK) output.
65	ZEROL	O	Not sound data detection output. H (L-ch) when no sound data is detected.
66	ZEROR	O	Not sound data detection output. H (L-ch) when no sound data is detected.
67	DTSI	I	TEST for DAC. (Connected to GND)
68	VDD	-	Power supply input. (+5V)
69	NLPWM	O	L-ch PWM output. (Reversed polarity)
70	LPWM	O	L-ch PWM output. (Normal polarity)
71	AVDD2	-	Power supply input to L-ch PWM driver. (Connected to +5V)
72	AVDD3	-	Power supply input to X'tal. (Connected to +5V)
73	XTAI	I	X'tal input to 33.8688MHz oscillator circuit.
74	XTAO	O	33.8688MHz X'tal oscillator circuit output.
75	AVSS1	-	Power supply input to X'tal. (Connected to GND)
76	AVSS2	-	Power supply input to PWM driver. (Connected to GND)
77	NRPWM	O	R-ch PWM output. (Reversed phase)
78	RPWM	O	R-ch PWM output. (Normal phase)
79	DTS2	I	TEST-2 for DAC. (Connected to GND)
80	DTS3	I	TEST-3 for DAC. (Connected to GND)

# IC, CXA1782BQ

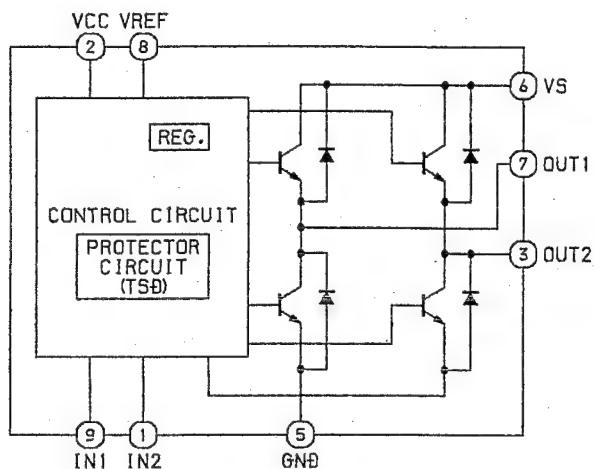
Pin No.	Pin Name	I/O	Description
1	FEO	O	Focus error amplifier output pin. This pin is connected to the FZC comparator input internally.
2	FEI	I	Focus error input pin.
3	FDFCT	I	Capacitor connection pin for time constant used when there is defect.
4	FGD	I	Corrects the focus servo high frequency gain.
5	FLB	I	This is a pin where the time constant is externally connected to raise the low frequency gain of the focus servo.
6	FEO	O	Focus drive output.
7	FEM	I	Focus amplifier inverted input pin.
8	SRCH	I	This is a pin where the time constant is externally connected to generate the focus search waveform.
9	TGU	I	This is a pin where the selection time constant is externally connected to set the tracking servo the high frequency gain.
10	TG2	I	This is a pin where the selection time constant is externally connected to set the tracking high frequency gain.
11	FSET	I	Pin for setting peak of the phase compensator of the focus tracking.
12	TAM	I	Tracking amplifier inverted input pin.
13	TAO	O	Tracking drive output.
14	SLP	I	Sled amplifier non-inverted input pin.
15	SLM	I	Sled amplifier inverted input pin.
16	SLO	O	Sled drove output.
17	ISSET	I	The current which determines height of the focus search, track jump and sled kick is input.
18	VCC	-	+5V power supply pin.
19	CLK	I	Serial data transfer clock input from DSP.
20	XLT	I	Latch input from DSP.
21	DATA	I	Serial data input from DSP.
22	XRST	I	Reset input pin. Reset at L.
23	COUT	O	Signal output to count the number of tracks.
24	SENS	O	FZC, DFCT, TZC, Gain or BAL is output depending on the command to DSP.
25	FOK	O	Output pin of the focus OK comparator.
26	CC2	O	Input pin where the DEFECT bottom hold output is capacitance coupled.
27	CC1	I	DEFECT bottom hold output pin.
28	CB	I	This is a pin where the DEFECT bottom hold capacitor is connected.
29	CP	I	This is a pin where the MIRR hold capacitor is connected and MIRR comparator non-inverted signal is input.
30	RFI	I	Input pin where the RF summing amplifier output is capacitance coupled.
31	RFO	O	RF summing amplifier output pin. (TP1)
32	RFM	I	RF summing amplifier inverted input pin. Gain of RF amplifier is determined by the resistor connected between RFO and this pin.



Pin No.	Pin Name	I/O	Description
33	LD	O	APC amplifier output pin.
34	PHD	I	APC amplifier input pin.
35~36	PHD1~2	I	RF I-V amplifier inverted input pin. These pins are connected to the A+C and B+D pins of the optical pickup.
37	BIAS	I	Bias adjustment pin of the non-inverted side of the focus error amplifier.
38~39	F~E	I	F and E IV amplifier non-inverted input pins. These pins are connected to the F and E of the optical pickup.
40	EI	-	Gain adjustment pin of the I-V amplifier E.
41	VEE	-	GND connection pin.
42	TEO	O	Tracking error amplifier output pin.
43	LPFI	I	BAL adjustment comparator input pin.
44	TEI	I	Tracking error input pin.
45	ATSC	I	Window comparator input pin for detecting ATSC.
46	TZC	I	Tracking zero-cross comparator input pin.
47	TDFCT	I	Capacitor connection pin for the time constant used when there is defect.
48	VC	O	DC voltage output pin of VREF. (VDD/2)

# IC BLOCK DIAGRAM

## IC, TA7291S

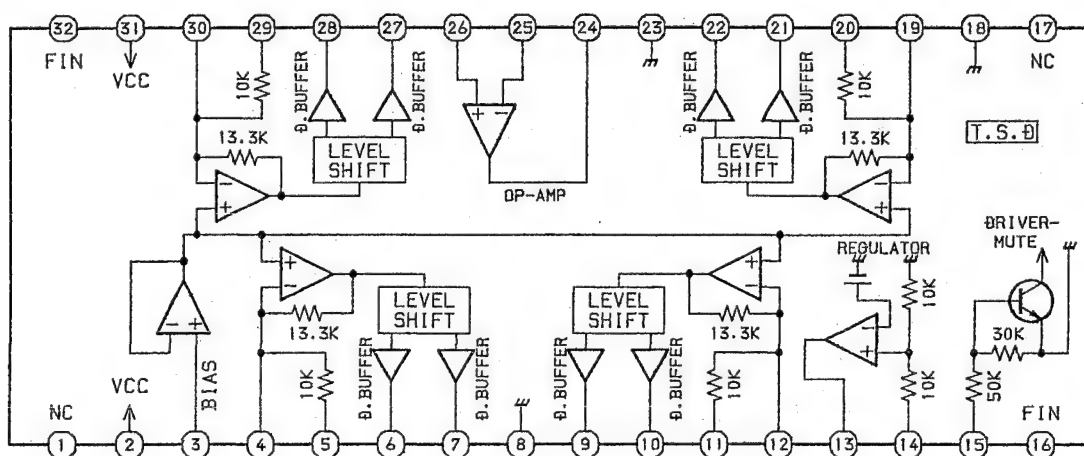


## TRUTH TABLE

INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	$\infty$	$\infty$	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

$\infty$ : HIGH IMPEDANCE  
INPUT IS "H" ACTIVE

## IC, BA6897S



T.S.D: Thermal shift down circuit  
D.BUFFER: Drive Buffer

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the CD EDIT/CHECK/button. All FL display tubes will light up, and the test mode will be activated.

### 2. How to cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the power switch button.
- Disconnect the AC plug.

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions can be used by pressing the operation keys.

Mode	Operation	FL display	Operation	Contents
Start mode	Test mode activation	All FL light up	• Laser diode illuminated under normal circumstances (CD block power supply ON)	Displays the machine mode that it is a test mode. All FL displays light up
Search mode	■ key	— —	• Continual focus search * NOTE 1 (The pickup lens repeats the full-swing up-down motion.) * Avoid continual searches that last for more than 10 minutes.	FOCUS SERVO • Laser current measurement (Across R628 resistor) • Check focus search waveform • Check focus error waveform * FOK / FZC are not monitored in the search mode.
Play mode	▶ key	/ —	• Normal playback • Focus search is continued if TOC cannot be read * NOTE 1	FOCUS SERVO / TRACKING SERVO CLV SERVO / SLED SERVO Check FOK / FZC
Traverse mode	key	/ —	• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON * NOTE 2	TRACKING SERVO ON / OFF Tracking balance (traverse) adjustment TP6(SFR602)
Sled mode	◀◀ key ▶▶ key	All FL light up	• Pickup moves to the outermost track • Pickup moves to the innermost track * NOTE 3 (During playback, machine operates normally.)	SLED SERVO Check SLED mechanism operation

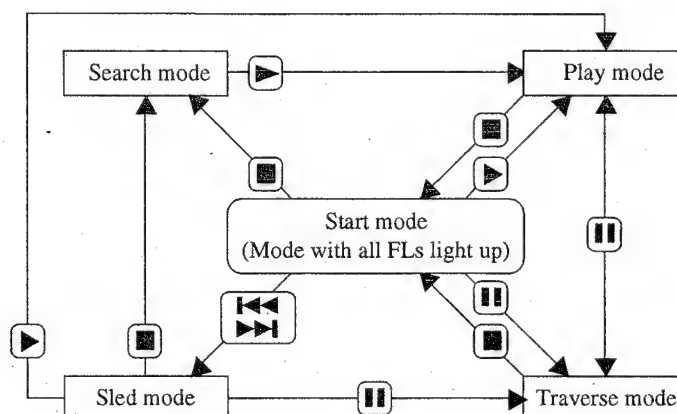
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases, the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to start mode (No. 1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

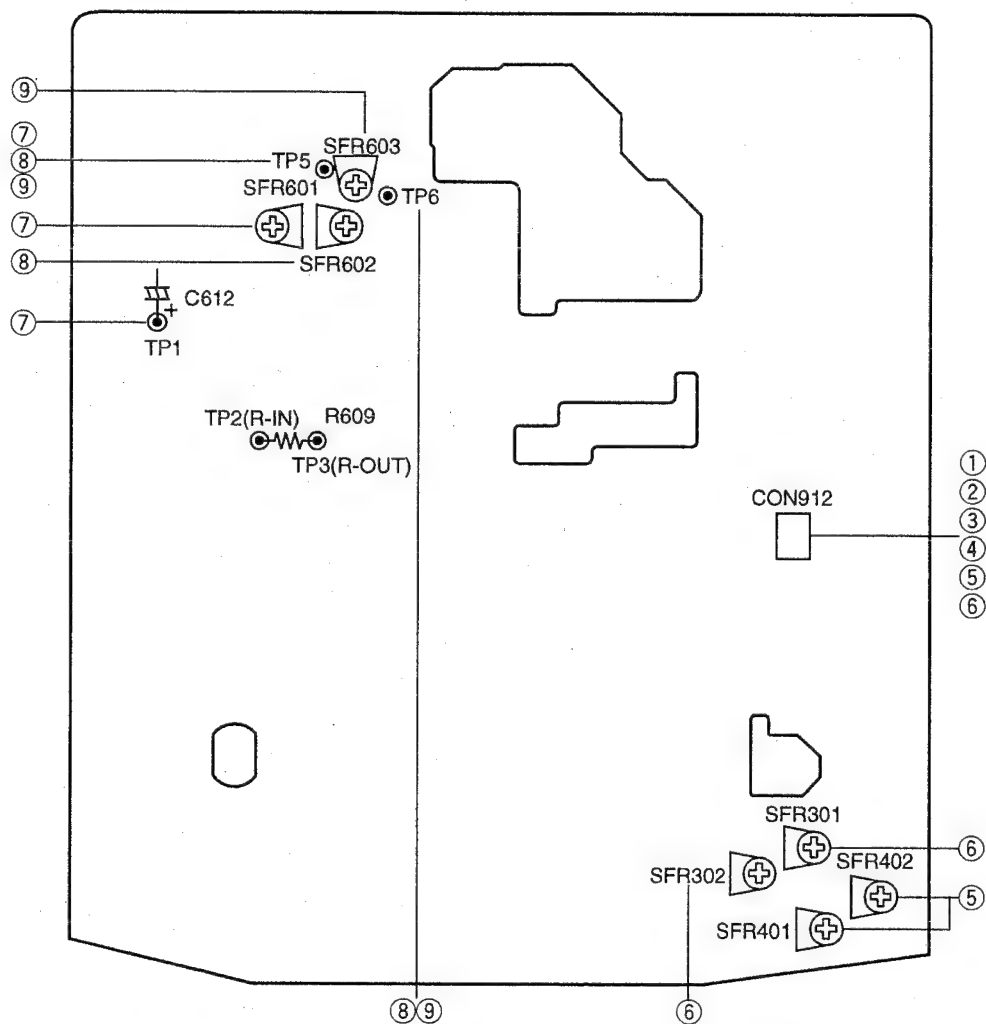
### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.

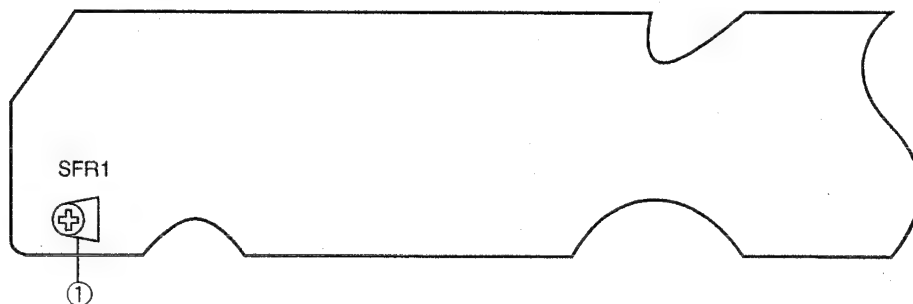


## ELECTRICAL ADJUSTMENT

### A MAIN C.B



### G DECK C.B



### < DECK SECTION >

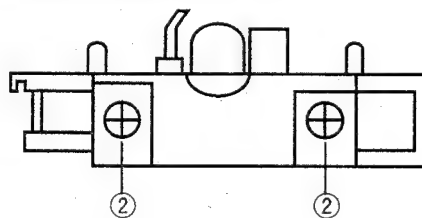
#### 1. Tape Speed Check

- Settings : • Test tape : TTA-100
- Test point : TP CONN 3P (CON 912)
- Adjustment location : SFR1

Method : Play back the test tape and check for  $3000\text{Hz} \pm 5\text{Hz}$ .

(NOTE) : RVS SIDE SPEED SPECIFICATION  
FWD SIDE SPECIFICATION  $\pm 45\text{Hz}$

### DECK R/P E HEAD



## 2. Head Azimuth Adjustment (DECK 1,2)

Settings : • Test tape : TTA-300

- Test point : TP CONN 3P (CON 912)
- Adjustment location : Head azimuth adjustment screw

Method : Play back the 10kHz signal of the test tape and adjust screw so that the output becomes maximum. Next, perform on each FWD PLAY and REV PLAY mode.

## 3. PB Sensitivity Check (DECK 1,2)

Settings : • Test tape : TTA-200

- Test point : TP CONN 3P (CON 912)

Method : Playback the test tape and check for output level becomes  $300\text{mV} \pm 5\text{mV}$ .

## 4. PB Frequency Response Check

Settings : • Test tape : TTA-300

- Test point : TP CONN 3P (CON 912)

Method : Play back the 315Hz and 10kHz signals of the test tape and check output difference to within  $0\text{dB} \pm 2\text{dB}$ , and the 10kHz signal with respect to that of the 315Hz signal is 2dB.

## 5. REC / PB Frequency Response Adjustment

Settings : • Test tape : TTA-602

- Test point : TP CONN 3P (CON 912)
- Input signal : 1kHz/10kHz (VIDEO2/AUX IN)
- Adjustment location : SFR401(Lch)  
SFR402(Rch)

Method : Establish the record mode. Adjust the CON 912 signal to 210mV and attenuate to -20dB. Record and playback 1kHz and 10kHz. Adjust SFR so that level difference between 1kHz and 10kHz is  $0\text{dB} \pm 0.3\text{dB}$ .

## 6. REC/PB Sensitivity Adjustment (DECK 2)

Settings : • Test tape : TTA-602

- Test point : TP CONN 3P (CON 912)
- Input signal : 1kHz/10kHz (VIDEO2/AUX IN)
- Adjustment location : SFR301 (Lch)  
SFR302 (Rch)

Method : Apply a 1kHz signal and REC mode. Then adjust OSC attenuator so that the output level at the TP CONN 3P(CON 912) becomes 21mV. Record and playback the 1kHz signal and adjust SFRs so that the output is  $21\text{mV} \pm 0.5\text{dB}$ .

## PRACTICAL SERVICE FIGURE

### <DECK SECTION>

Tape speed :	3000Hz $\pm$ 45Hz
Wow & flutter :	Less than 0.35% (R.M.S)
Take-up torque :	30 ~ 55g-cm (FWD, REV)
F.F & REW torque :	75 ~ 180g-cm
Back tension :	2 ~ 7g-cm (FWD, REV)
Distortion :	Less than 2.0% (PB, AC) Less than 3.0% (REC/PB, AC)
Noise level :	Less than 50mV (PB, AC) Less than 50mV (REC/PB, AC)
Signal to noise ratio :	More than 40dB (PB, AC) More than 38dB (REC/PB, AC)
Erasing ratio :	More than 60dB (at 125Hz)
Test tape :	TTA-602

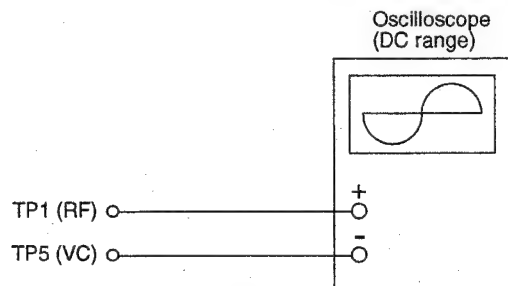
### <CD SECTION>

Note :

Connect a probe (10:1) of the oscilloscope or the frequency counter to a test point.

## 7. Focus Bias Adjustment

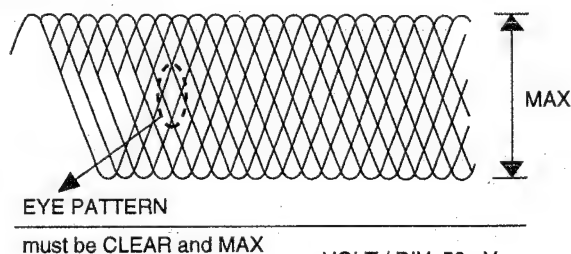
Make the focus bias adjustment when replacing and repairing the optical block.



- 1) Connect an oscilloscope to the test points TP1 (RF) and TP5 (VC).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second composition.

- 4) Adjust SFR601 so that RF signal of the test point TP1 (RF) is MAX and CLEARREST.

RF signal waveform

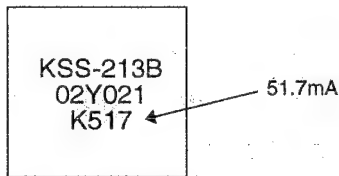


VOLT / DIV: 50mV  
TIME / DIV: 0.5μs



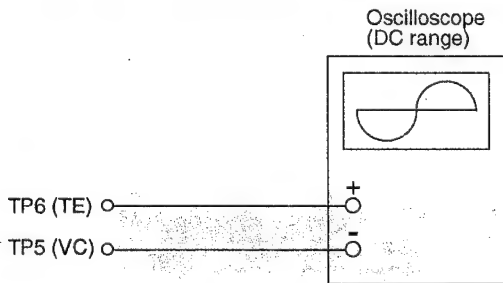
Note:

The current of the laser signal can be checked with the voltages on both sides of R628 (10Ω). The difference for the specified value shown on the level must be within ± 6.0mA.

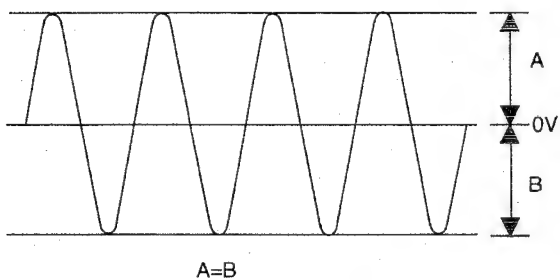


$$\text{Laser current } I_{op} = \frac{\text{Voltage across R628}}{10}$$

#### 8. Tracking Balance Adjustment



- 1) Connect an oscilloscope to the test points TP6 (TE) and TP5 (VC).
- 2) Start the CD test mode.
- 3) Insert test disc TCD-782 (YEDS-18) and become traverse mode of CD test mode.
- 4) Adjust SFR602 so that the traverse waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
- 5) After the adjustment is completed, remove the connected lead wires from the terminals.
- 6) Cancel the CD test mode.



VOLT / DIV: 20mV  
TIME / DIV: 1ms

#### 9. Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly. However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when 2-axis device operates. However, as these gains are reciprocal, the adjustment is performed at the point where both gains are satisfied.

- When gain is raised, the noise increases when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

When the gain adjustment is not satisfied, the symptoms below appear.

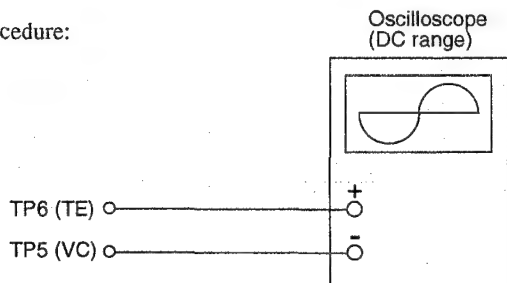
Symptoms	Gain	(Focus)	Tracking
• The time until music starts becomes longer for STOP → -PLAY or automatic selection (⏮, ⏭ buttons pressed.) (Normally takes about 2 seconds.)		low	low or high
• Music does not start and disc continues to rotate for STOP → -PLAY or automatic selection (⏮, ⏭ buttons pressed.)		—	low
• Disc stops to rotate shortly after STOP → -PLAY.		low or high	—
• Sound is interrupted during PLAY. Or time counter display stops.		—	low
• More noises during the 2-axis device operation.		high	high

The following is simple adjustment method.

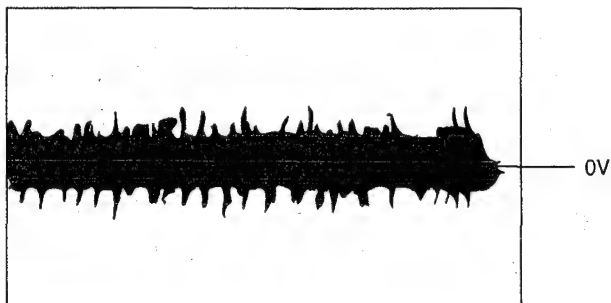
– Simple adjustment –

Note: Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment.  
If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure:



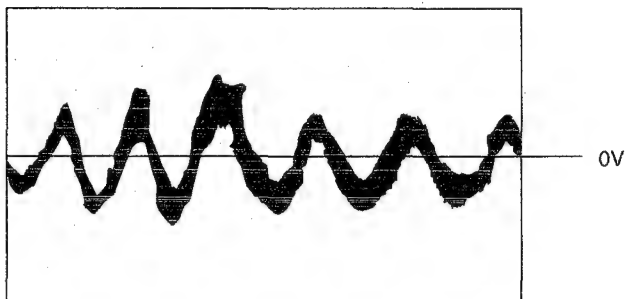
- 1) Keep the set horizontal. (If the set is not kept horizontally, this adjustment cannot be performed due to the gravity against the 2-axis device.)
- 2) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 3) Connect an oscilloscope to TP6 (TE) of the MAIN C.B.
- 4) Adjust SFR603 so that the waveform appears as shown in the figure below. (tracking gain adjustment)



VOLT / DIV: 50mV  
TIME / DIV: 1mS

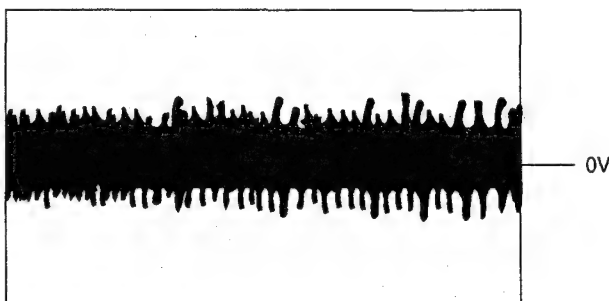
• Incorrect example

Low tracking gain  
(The fundamental wave appears as compared with the waveform adjusted)



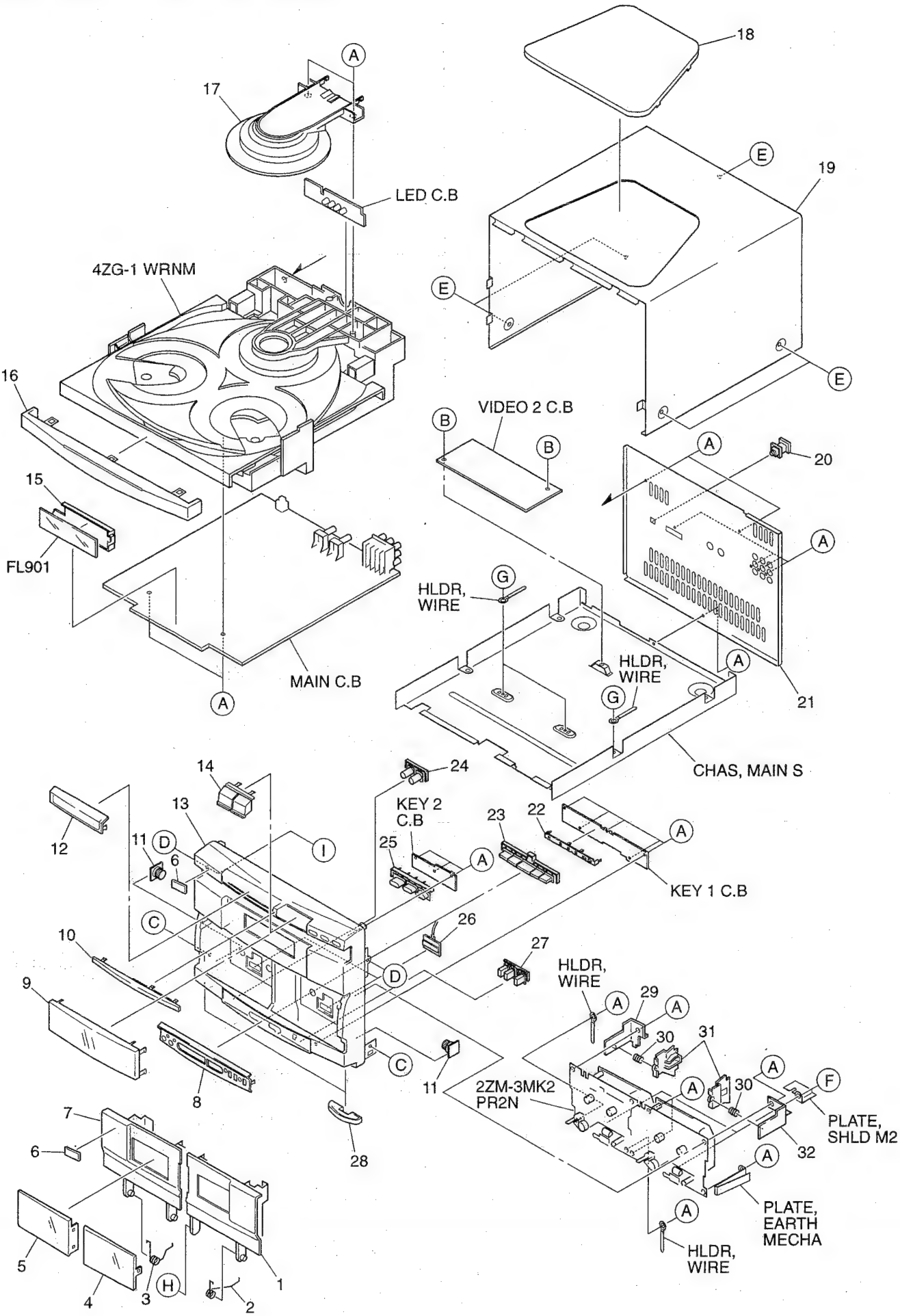
VOLT / DIV: 50mV  
TIME / DIV: 1mS

High tracking gain  
(The frequency of the fundamental wave is higher than in low gain)



VOLT / DIV: 50mV  
TIME / DIV: 1mS

MECHANICAL EXPLODED VIEW 1 / 1

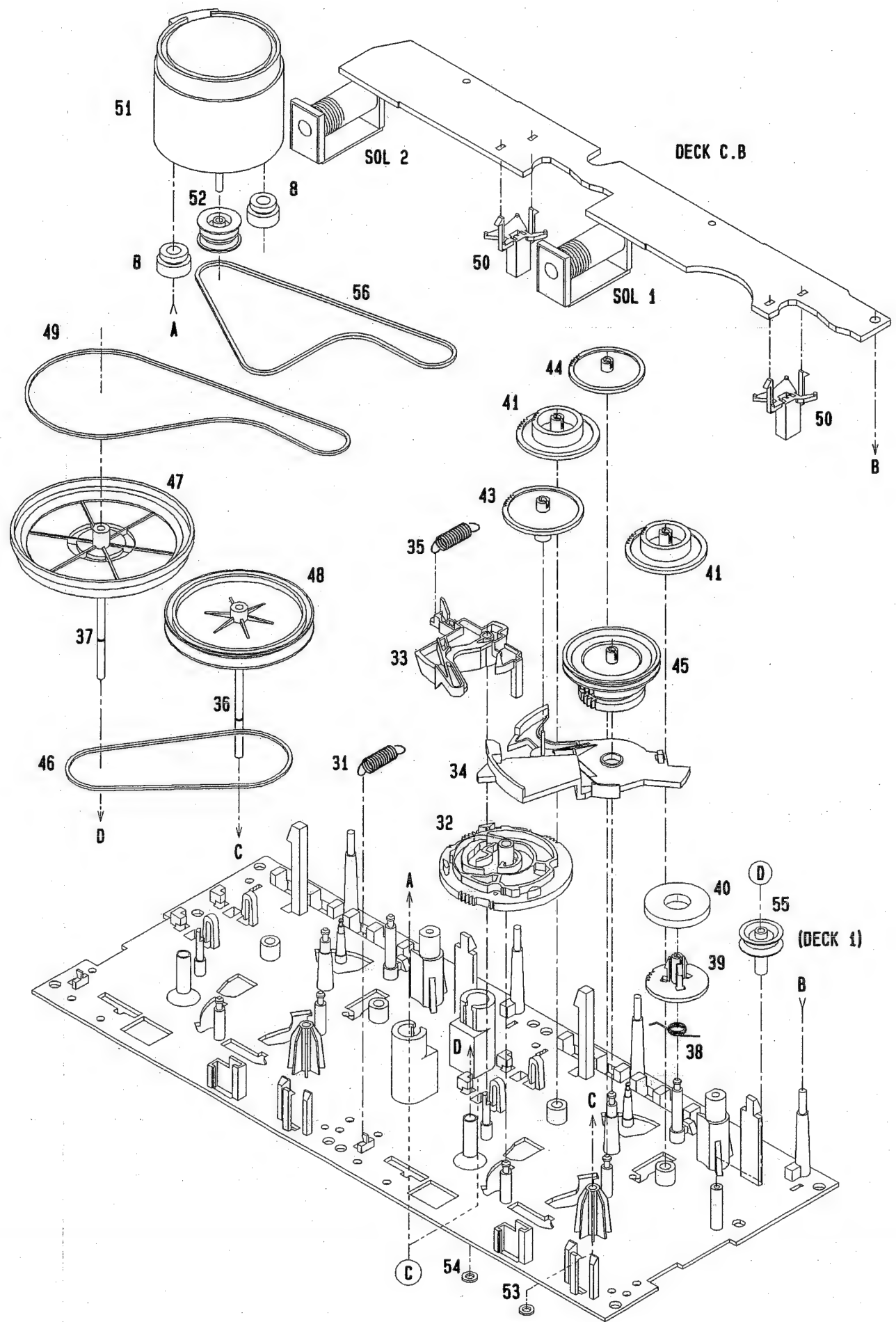
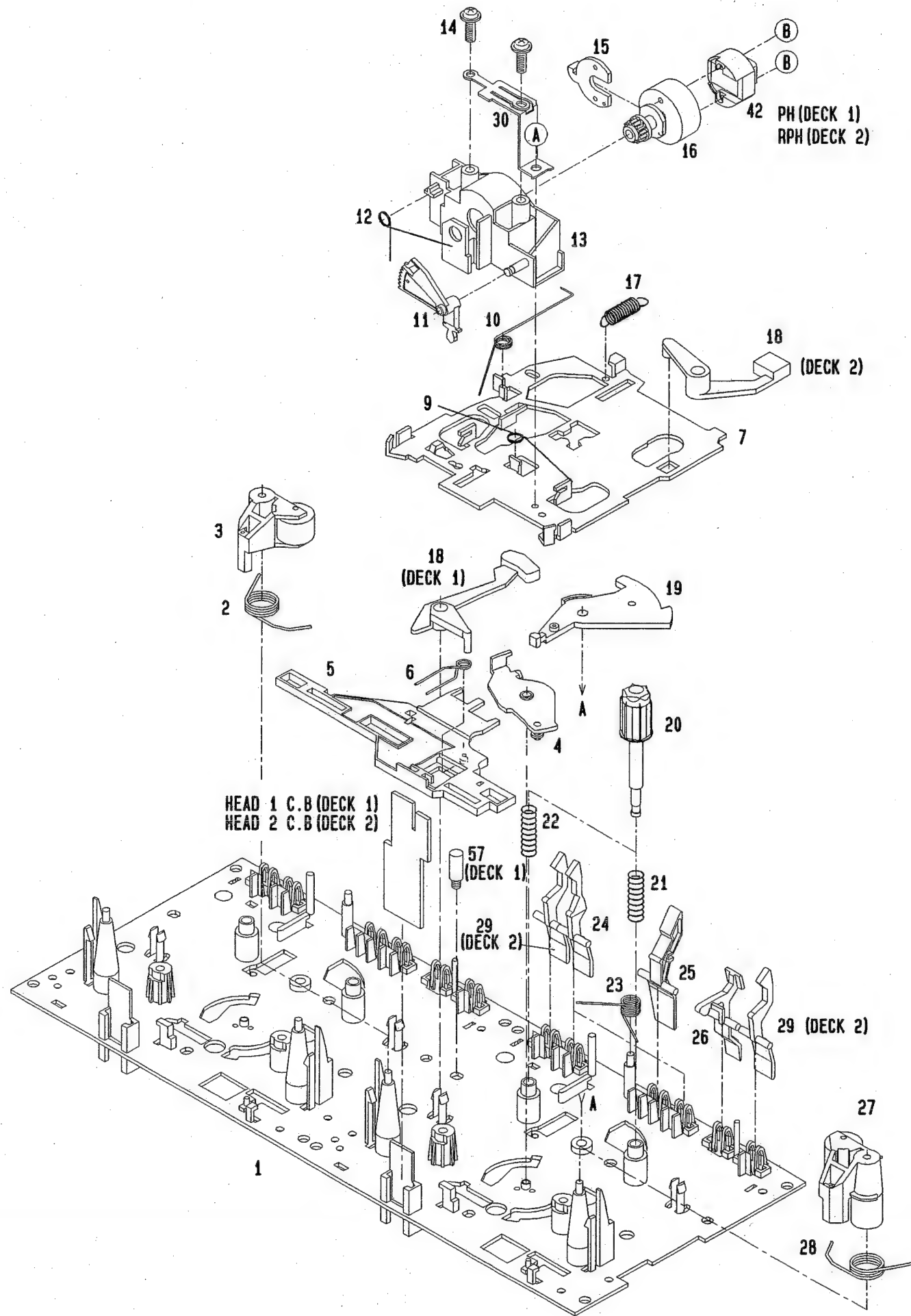


MECHANICAL PARTS LIST 1 / 1

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	86-NV1-004-019		BOX, CASS 2	23	86-NV1-010-019		KEY, PLAY
2	83-NV4-202-119		SPR-T, EJECT 2	24	86-NV1-013-019		KEY, REC
3	83-NV4-201-119		SPR-T, EJECT 1	25	86-NV1-012-019		KEY, DISC
4	86-NV1-009-019		WINDOW, CASS 2	26	87-070-108-019		LED, SLF-301C-37
5	86-NV1-008-019		WINDOW, CASS 1	27	86-NV1-014-019		KEY, DOLBY
6	82-NE8-032-019		BADGE AIWA 27.5	28	85-NC1-019-010		RING, FOOT
7	86-NV1-003-019		BOX, CASS 1	29	82-NF5-226-019		HLD, LOCK 1N
8	86-NV1-015-019		PANEL, CONTROL	30	82-NF5-228-019		SPR-C, LOCK
9	86-NV1-006-019		WINDOW, DISPLAY	31	82-NF5-229-019		PLATE, LOCK
10	86-NV1-016-019		PANEL, CD	32	82-NF5-227-019		HLD, LOCK 2N
11	87-063-165-019		OIL-DMPR 150	A	87-067-703-019		BVT2+3-10 (W/O SLOT)
12	86-NV1-007-019		WINDOW, CD	B	87-067-584-019		BVT2+3-6 W/O SLOT
13	86-NV1-001-019		CABI, FR<YJ, YL>	C	87-591-094-419		QIT + 3 - 6 GOLD
13	86-NV1-020-019		CABI, FR U<YU>	D	87-721-097-419		QT2+3-12 GLD
14	86-NV1-011-019		KEY, OPEN	E	87-067-641-019		UTT2+3-8 W/O SLOT BLK
15	86-NT1-203-019		GUIDE, FL	F	87-571-032-419		VIT+2-3
16	86-NV1-005-019		PANEL, TRAY	G	87-571-092-419		VIT+3-4
17	84-ZG1-011-019		REFLECTOR, CD	H	82-NE8-215-019		W, 4.2-6.8-0.18
18	86-NF6-007-019		WINDOW, TOP	I	85-NF7-599-019		PVC W, 3.2-8-0.3
19	86-NV1-017-019		CABI, STEEL				
20	84-ZG1-245-019		CAP, OPTICAL				
21	86-NV1-002-019		PANEL, REAR YUBNM<YJ>				
21	86-NV1-021-019		PANEL, REAR YLBNM<YL>				
21	86-NV1-019-019		PANEL, REAR YUBNM<YU>				
22	86-NV1-202-019		GUIDE, LED				

TAPE MECHANISM EXPLODED VIEW 1 / 1



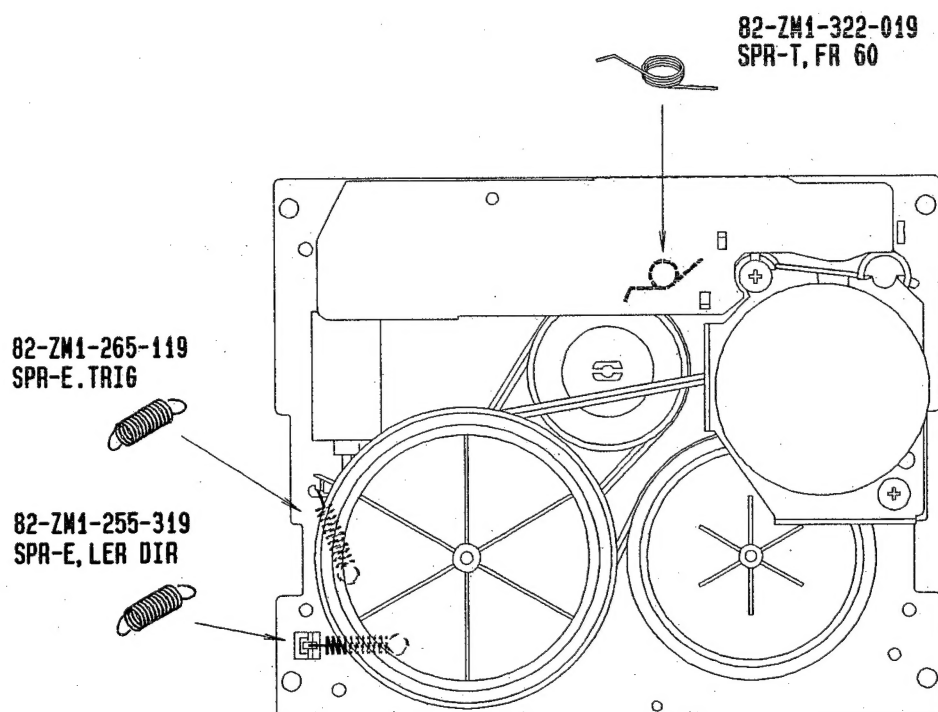
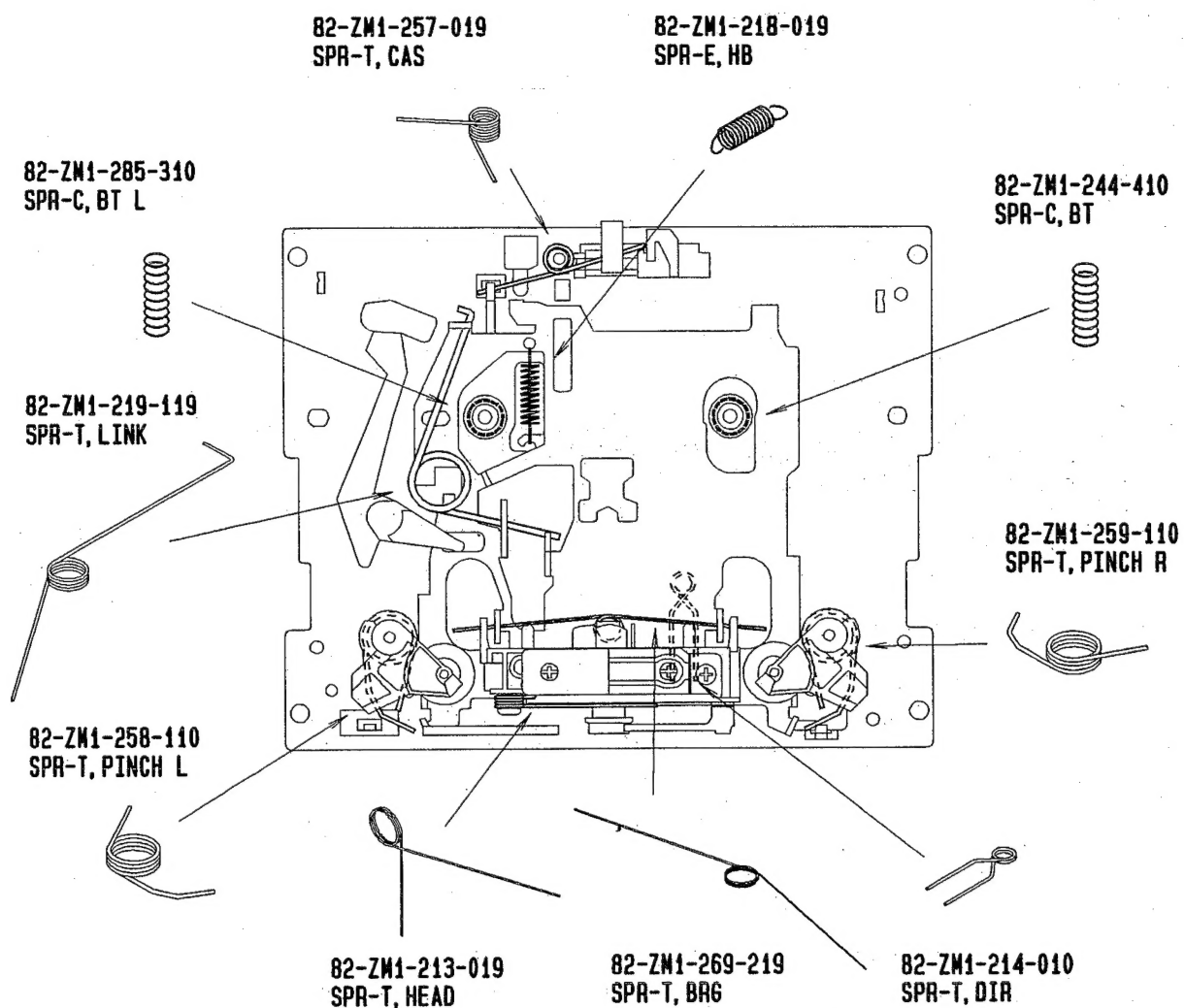
# TAPE MECHANISM PARTS LIST 1 / 1

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If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	82-ZM3-301-519		CHAS ASSY, M2	35	82-ZM1-265-119		SPR-E, TRIG
2	82-ZM1-258-110		SPR-T, PINCH L	36	82-ZM1-236-019		CAPSTAN N 2-41.5
3	82-ZM1-345-019		LVR ASSY, PINCH L W	37	82-ZM1-239-019		CAPSTAN N 2.2-41.7
4	82-ZM1-333-010		PLATE, LINK 2	38	82-ZM1-322-019		SPR-T, FR60
5	82-ZM1-266-11K		LVR, DIR	39	82-ZM1-220-219		GEAR, IDLER
6	82-ZM1-214-010		SPR-T, DIR	40	82-ZM3-616-019		RING MAGNET 4
7	82-ZM1-206-81K		CHAS, HEAD	41	82-ZM1-216-31K		GEAR, REEL
8	82-ZM3-307-019		CUSH-G, DIA3.7-8-3.2	42	87-046-355-019		HEAD, PH HADKH2529B(PH)
9	82-ZM1-269-219		SPR-T, BRG	42	87-046-356-019		HEAD, RPH HADKH5581B(RPH)
10	82-ZM1-219-119		SPR-T, LINK	43	82-ZM1-225-21K		GEAR, FR
11	82-ZM1-210-119		GEAR, H T	44	82-ZM1-226-019		GEAR, REW
12	82-ZM1-213-019		SPR-T, HEAD	45	82-ZM1-228-810		SLIP DISK ASSY
13	82-ZM1-207-619		GUIDE, TAPE	46	82-ZM1-338-010		BELT FR4
14	82-ZM1-283-310		S-SCREW, AZIMUTH	47	82-ZM1-238-81K		FLY-WHL ASSY, R (DECK 2)
15	82-ZM1-314-119		PLATE, HEAD	47	82-ZM3-210-71K		FLY-WHL ASSY, R2 (DECK 1)
16	82-ZM1-208-119		HLDR, HEAD	48	82-ZM1-235-51K		FLY-WHL ASSY, L (DECK 2)
17	82-ZM1-218-019		SPR-E, HB	48	82-ZM3-208-61K		FLY-WHL ASSY, L2 (DECK 1)
18	82-ZM1-263-110		LVR, EJECT L (DECK 1)	49	82-ZM3-329-210		BELT, SBU R2
18	82-ZM1-264-010		LVR, EJECT R (DECK 2)	50	82-ZM1-245-210		HLDR, IC
19	82-ZM1-222-21K		LVR, PLAY	51	87-045-347-019		MOT, SHU2L 70(M1)
20	82-ZM1-217-319		REEL TABLE	52	82-ZM3-221-010		PULLEY, MOT 2M
21	82-ZM1-244-510		SPR-C, BT	53	82-ZM1-288-019		SH, 1.63-3.2-0.5 SLT
22	82-ZM1-285-310		SPR-C, BT L	54	80-ZM6-243-019		SH, 1.75-3.6-0.5 SLT
23	82-ZM1-257-019		SPR-T, CAS	55	82-ZM3-304-110		PULLEY, COUPLER (DECK 1)
24	82-ZM1-241-319		LVR, MC	56	82-ZM3-328-110		BELT, SBU P2
25	82-ZM1-242-019		LVR, CAS	57	82-ZM3-216-019		SHAFT, COUPLER N (DECK 1)
26	82-ZM1-243-019		LVR, STOP	A	82-ZM1-315-010		S-SCREW, GVIDE TAPE
27	82-ZM1-346-019		LVR ASSY, PINCH R W	B	80-ZM6-207-019		V+1.6-7
28	82-ZM1-259-110		SPR-T, PINCH R	C	82-ZM3-318-019		S-SCRW MOTOR M2
29	82-ZM1-240-11K		LVR, REC (DECK 2)	D	87-067-972-019		PW, 1.05-3-0.25 SLT
30	82-ZM1-298-010		SPR-P, EARTH				
31	82-ZM1-255-319		SPR-E, LVR DIR				
32	82-ZM3-305-01K		GEAR, CAM M2				
33	82-ZM1-227-21K		LVR, TRIG				
34	82-ZM3-306-11K		LVR, FR M2				



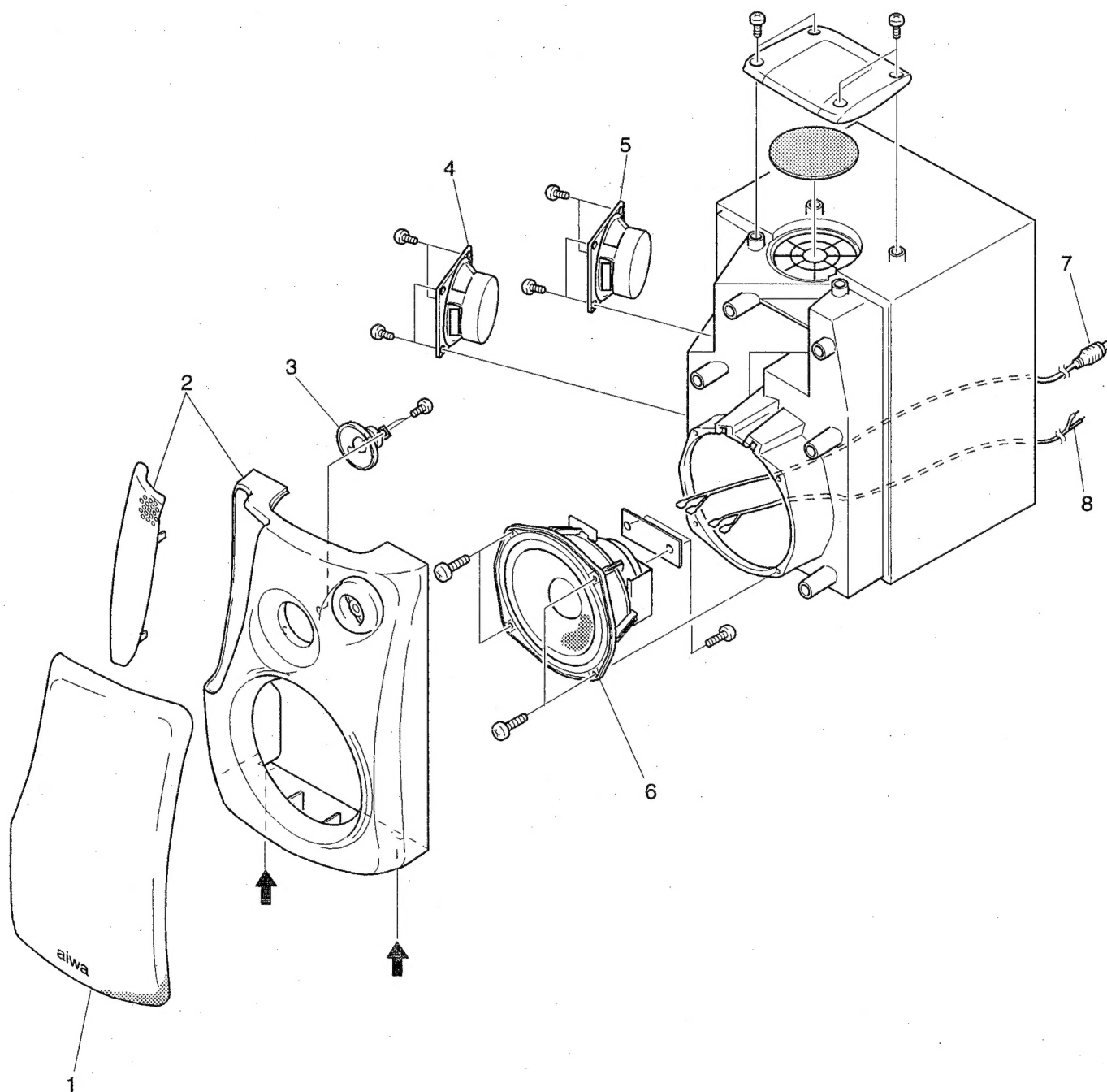
# SPRING APPLICATION POSITION



MODEL NO.

# SX-ANH9/ANH90

SPEAKER EXPLODED VIEW 1 / 1



## SPEAKER PARTS LIST 1 / 1

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	86-NS1-010-010		GRILLE FRAME ASSY, R	4	86-NS1-606-010		SPKR S 80
1	86-NS1-011-010		GRILLE FRAME ASSY, L	5	86-NS1-604-010		SPKR M 80
2	86-NS1-001-010		PANEL FR, R	6	86-NS1-602-010		SPKR W 140H
2	86-NS1-002-010		PANEL FR, L	7	85-NS6-611-019		SPEAKER CORD Y/B
3	86-NS1-608-010		SPKR T 50	8	83-NS5-613-019		SPEAKER CORD ASSY

## ■ ACCESSORIES/PACKAGE LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	86-NT1-901-019		IB, HE(ECA) -M<HEJ, HRJ>
1	86-NT1-902-019		IB, LH(ES) -M<LH>
1	86-NT1-903-019		IB, U(EFS) -M<U>
2	85-NF5-631-019		RC-T501
3	87-006-225-019		AM LOOP ANT NC2
4	87-043-115-019		ANT, FEEDER FM
△5	87-099-789-019		PLUG, ADPTR IR44<EXCEPT U>

# REFERENCE NAME LIST

## ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER
サージサプレッサ	SERGESUPPRESSOR
セラコン	CAP,CERA

## MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL
ジグアーム	ARM, SHAFT
ジグガイド	GUIDE, SHAFT
ストラップ	STRAP
トクナベ	S-SCREW
ヒンジ	HINGE
ヒンジビス	S-SCREW
ビスセレート	SCREW, SERRART